CSIR NEWS

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NEW LABORATORIES OF NCL OPENED

Three new laboratories, namely, a laboratory each for the Organic Intermediates & Dyes and Essential Oils Divisions and a radiation laboratory in the Physical Chemistry Division of the National Chemical Laboratory, Poona were inaugurated by Prof. Humayun Kabir, Union Minister for Scientific Research & Cultural Affairs on Dec. 21, 1962.

The Organic Intermediates & Dyes Division will pay special attention to modern methods of reactor development and carry out process research including chemical thermodynamics, applied kinetics and generalized procedures for the design of catalytic and non-catalytic reactors. It will also undertake pilot plant work on behalf of the dyestuff and related organic chemical industries.

The Essential Oils Division, set up in 1960, will have facilities for work on essential oils from the stage of isolation to that of complete structure determination as well as on synthetic perfumery chemicals.

The Radiation Laboratory will have facilities for work on the use of radioactive isotopes and their associated radiation in carrying out fundamental and applied research.

LALA SHRI RAM PASSES AWAY

We deeply regret to report the demise at New Delhi on Jan. 11, 1963 of Lala Shri Ram, one of the leading industrialists of the country and a member of the Governing Body of CSIR since its inception. Born in 1884, he began his career in 1909 in Delhi Cloth & General Mills Co. Ltd. and took over its management in 1934. Very soon he built up a large network of industries connected with sugar, distillery, heavy chemicals, fertilisers, potteries, sewing machines, electric fans and motors. He has held many high and respected offices in the Public Sector Industries.

Lala Shri Ram was keenly interested in education and scientific research and has established several colleges and schools and an industrial research institute which bears his name. His wise counsel was ever of inestimable value in the decisions of the Board and Governing Body of CSIR. He was the father of the idea of revising Watt's Dictionary of Economic Products of India which led to the publication of the *Wealth of India* Series. He has been closely connected with the publication activity of the CSIR and has been a member of the Publications Committee for a number of years. Thanks to his initiative and deep interest, the Publications Directorate of the Council has expanded considerably.

At a meeting of the members of the Staff of CSIR held on January

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Krishnan Memorial Lecture

Dr. S. Husain Zaheer, Director-General, Scientific and Industrial Research delivered the Krishnan Memorial Lecture instituted by the All India Science Teachers' Association in memory of late Dr. K.S. Krishnan at the Seventh All India Science Teachers' Conference at Hyderabad on Dec. 26, 1962. The subject of his lecture was *Education for the age of science.*

Dr. P.S. Gill

Dr. Piara Singh Gill, Professor and Head of the Department of Physics, Aligarh Muslim University, Hony Professor of Physics, University of Jammu & Kashmir and Director, Gulmarg Research Laboratory, has been appointed Director, Central Scientific Instruments Organisation.

Born (Oct. 28, 1911) in the village Chela, Dist. Hoshiarpur, Punjab, Dr. Gill obtained his Bachelor's and Master's degrees from the University of Southern California (1935 & 36) and Ph. D. degree from the University of Chicago (1940). He worked under Prof. A. H. Compton, the Nobel Laureate.

Returning to India in 1940, Dr. Gill joined the Forman Christian College, Lahore as Lecturer in Physics. Since September 1949, Dr. Gill has been Professor and Head of the Department of Physics, Aligarh Muslim University.

In 1945 Dr. Gill led an expedition to Bara Lacha Pass in the Lahul Valley to study the production of mesons. He followed these experiments at heights of 35,000 ft above sea level in Lahore in a Royal Air Force aircraft and later made measurements of cosmic ray mesons at heights of 42,000 ft in a U.S. Navy Superfortress from California to Peru.

Dr. Gill was a consultant at the National Bureau of Standards, Washington, D.C. (1949) and a visiting scientist at the Department of Terrestrial Magnetism & Atmospheric Electricity of the Carnegie Institution, Washington (1948) and the Bartol Research Foundation of the Franklin Institute, U.S.A. (1950). He delivered lectures at the Universities of California, Florida & Iowa States, Missourie and New York, under the Visiting Scientist's Programme in Physics, instituted by the American Associaton of Physics Teachers and American Institute of

(Contd on p. 2, col. 1)

B R I E F S

Coordination of Medicinal Plants Research : Joint Committee

A joint Technical Committee of the representatives of CSIR and Indian Council of Agricultural Research (ICAR) has been constituted in order to bring a greater degree of coordination between the Central Indian Medicinal Plants Organisation (CIMPO) and the Medicinal Plants Committee of ICAR. The five-man Committee is headed by Dr. S. Husain Zaheer, Director-General, Scientific & Industrial Research and consists of Shri P.A. Narielwala, Tata Industries Private Ltd, Bombay; Officer-in-charge, CIMPO, New Delhi; Dr. J.S. Patel, Agricultural Commissioner to the Government of India, New Delhi; and Dr. R.N. Mathur, Additional Agricultural Commissioner (Soils) to the Government of India, New Delhi.

Electron Devices

A two-day symposium on Electron Devices was inaugurated at the Central Electronics Engineering Research Institute, Pilani by Shri S.D. Pande, Secretary, Birla Education Trust on Dec. 25, 1962.

Nearly 40 delegates in addition to the scientific staff of the Institute participated. About 20 papers dealing with the design and development of electron devices and related techniques were presented in three technical sessions, two on Solid State Devices and one on Vacuum Devices.

Unesco Symposium at CDRI

The seven-day international symposium on Environmental Physiology and Psychology in Arid Conditions organised by the Unesco at the Central Drug Research Institute, Lucknow concluded on Dec. 13, 1962. The symposium was inaugurated by Shri C.B. Gupta, Chief Minister, U.P.

More than 50 scientists from 15 countries, namely, Australia, France, India, Israel, Malaya, Netherlands, South Africa, Sweden, Thailand, U.A.R., U.K., U.S.A., U.S.S.R., Viet Nam and West Germany, participated in the symposium. The discussions covered the fields of medical climatology of arid zones, physiological anthropology, physiology of arid lands, nutrition and heat, water and electrolytes, neurophysiology of heat exposure, solar radiation in heat balance, performance and comfort standards, and physiological aspects of life in hot climates.

Conference of Textile Associations

The fourth annual Technological Conference of the three textile research associations (ATIRA, Ahmedabad; BTRA, Bombay; and SITRA, Coimbatore) was held at Ahmedabad during Dec. 3-5, 1962. The inaugural address which was to have been delivered by Shri Bharat Ram, President of Indian Cotton Mills' Federation, was read out in his unavoidable absence by Dr. T.S. Subramanian, Director, ATIRA.

Twenty-five papers covering a wide range of interests in the basic and applied fields were presented and discussed in seven sessions. The subjects covered may be broadly classified into basic investigations on fibre structure, disposition of fibres in slivers and yarns, synthesis of yarn tensile property from fibre properties, differential absorption of fibres on carding surfaces, mechanism of dyeing and cross-linking of cellulose with various types of agents; applied studies on the effects of changing technological parameters during processing on yarn and fabric properties; and design of new instruments for measurement of specific yarn properties and modification of existing production machines in order to obtain higher productivity or greater efficiency.

SITRA Technological Conference

The third annual Technological Conference of SITRA, Coimbatore held on Dec. 13 & 14, 1962 was inaugurated by Shri D.C. Kothari, Chairman, Southern India Millowner's Association.

About 200 delegates representing mill management, technical staff as well as textile trade attended the conference. Nine papers on the following subjects were discussed: Blending of viscose staple fibre and cotton, effect of card-pen on processing and yarn quality, upgrading of Indian cotton, single versus double end feed at the spinning frame, effect on yarn quality of spinning draft, prediction of spinnability of cottons, hairiness of cotton yarns, control of hank and moisture regain, and metric system in textile industry.

An exhibition showing the methods of conversion of yarn to metric system and also samples of knitted fabrics made out of a blend of cotton and viscose staple fibre was arranged on the occasion.

Award for Medical Research

Dr. S. Mukherjee, Senior Scientific Officer : Grade I, Indian Institute for Biochemistry and Experimental Medicine, Calcutta has been awarded the Basanti Devi Amir Chand Senior Prize by the Indian Council of Medical Research for his contribution in cholera research.

RRL, Jammu—Picture shows Dr. S. Husain Zaheer, DG examining the work on mutations rate of a medicinal plant subjected to radiation from monanzite, during his visit on December 19, 1962.

RESEARCH IN PROGRESS

National Laboratories

NML, JAMSHEDPUR

Production of Ferro-Tungsten—Optimum conditions for the production of carbon-free ferro-tungsten assaying W, 78; Si, 0.71; Mn, 0.43; and Al < 0.3 per cent have been established, as a result of extensive trials on the reduction of wolframite concentrates with various proportions of aluminium powder, ferro-silicon, mill-scale and fluorspar. The product conforms to I. S. specification for low-carbon ferro-tungsten.

CFTRI, MYSORE

Drying of Grapes—Commercially important varieties of Indian grapes, such as Kishmish, Gulabi, Pachai Drakshai and Kandhari, have been found to be suitable for drying as such without any modification in their sugar-acid ratio. On the other hand, it has been found necessary to impregnate Bangalore Blue, Black Prince, Anab-e-Shahi, Bhokri, Selection 7 and Selection 94 varieties with sufficient sugar by syruping for obtaining raisins of acceptable quality. Optimal conditions for 'checking', syruping, sulphiting and sulphuring, fortification with vitamin C and drying, have been standardized for the different varieties. Among the varieties dried as such, Kishmish and among those dried after syruping, Anab-e-Shahi and Selection 7 have given the best raisins. At a moisture content of about 20 per cent, the shelf-life of the dried grapes was about 6 months at 37°C., and over a year at the room temperature (24-30°C.).

Tamarind Concentrate—A process for the extraction of all the solubles from tamarind pulp and concentration of the extract under vacuum to a thick consistency has been standardised on a pilot plant scale. The product has 68-70 per cent soluble solids and 14-15 per cent tartaric acid. It has a pleasant, sweetish, acidic taste and disperses easily in water. The product has a big potential market in western countries.

CSMCRI, BHAVNAGAR

Evaporation Control at Kodiyar Lake—Field experiments on evaporation control have been started at the Kodiyar Lake, an important water supply source for Bhavnagar city, as there has been an acute water shortage. The experiments consist in spreading on the surface of water monomolecular films of emulsions of certain harmless chemicals such as cetyl alcohol by hand spraying units or shore distributors.

Measurements of evaporation losses have shown that a saving of 78 lakh gal. of water for a water spread of 176 acres can be effected. The cost of saving 1000 gal. of water works out to be approximately 5 n.P.

CMRS, DHANBAD

Illumination Survey—Adequate lighting is very necessary for efficient work. Insufficient lighting causes nystagmus, a disease of the eye and the central nervous system. Good lighting goes a great deal in increasing the efficiency of mine and colliery workers as well as protecting them against this disease. Hence, illumination survey in a number of mines has been started. So far, exhaustive survey in one colliery and preliminary survey in five collieries have been carried out.

Sponsored Research

Inorganic Analysis—The behaviour of selenium and tellurium salts in quantitative analysis was undertaken with a view to find out how far selenides and tellurides could be used like sulphides in the estimation of elements. It has been shown that if sodium selenide reagent is used in a specially devised apparatus, all those elements which can be estimated by decomposition of thiosalts can also be estimated as selenides by the decomposition of seleno salts. Thus, it was found possible to estimate quickly and accurately arsenic, antimony, tin, rhenium, mercury, silver, platinum, palladium, ruthenium, rhodium and gold as selenides. Many elements which do not form seleno salts can also be estimated as selenides by direct precipitation with sodium selenide. The method is applicable in the case of cadmium, lead, bismuth, indium and zinc. On account of similarity in the behaviour of sulphur, selenium and tellurium, investigations were also carried out on the use of sodium telluride in the estimation of elements. It was found that at least three elements, namely, cadmium, bismuth and silver, can be quantitatively precipitated and estimated as tellurides—I.K. Taimni & Ram Raksh Pal, Allahabad University, Allahabad.

Biochemical and Chemotherapeutic Studies in Experimental Malaria—The object of the scheme was to study the metabolic activities of *Plasmodium berghei* in rats with particular reference to proteolytic enzymes and to investigate the effect of antimalarial drugs on these enzymes.

Using the haemolysin method of obtaining malarial parasities almost free from most of the host cell constituents and a technique of obtaining 100 per cent parasitemia in rats infected with *P. berghei*, the presence of proteolytic enzyme in malarial parasites has been demonstrated.

The pyridine nucleotide contents (both the oxidised and reduced form) have been estimated in the host and infected red blood cells for the first time. A significantly high content of reduced form of the pyridine nucleotides in the infected condition has been found. The estimation of adenosine triphosphate (ATP) contents of the host and infected cells has revealed that there is a definite drain of ATP formed in the host cells by the intracellular parasite.

For the first time, it has been observed that some of the Krebs cycle intermediates are utilized by the isolated parasites and that the parasite utilises substrates by a pathway mainly involving pyruvate and lactate. The high content of reduced form of pyridine nucleotides may play a significant part in the pathway.

Using radioactive phosphate, it has been proved that the parasite is able to incorporate phosphate into high energy phosphate components by utilising glutamate, β-hydroxybutyrate as well as succinate. This process seems to be phosphate dependent. Externally added adenosine diphosphate does not influence the incorporation probably due to permeability factors—T. Ramakrishnan & M. Sirsi, Indian Institute of Science, Bangalore.

(Contd from page 1, col. 3)
11, 1963 presided over by Dr. S. Husain Zaheer, Director-General, Scientific & Industrial Research the following condolence resolution was passed.

"This meeting of the officers of the Council of Scientific & Industrial Research wishes to place on record their deep sense of irreparable loss and grief at the sad demise this morning of Lala Sir Shri Ram, who had been closely associated with this Organisation as a member of the Governing Body ever since its inception and as Chairman and member of various boards and committees of the Council. He was one of the leading industrialists of India and a great patron of science and education.

"This meeting also wishes to convey their sincere condolence at the sad bereavement caused to the members of the family of the late Lala Sir Shri Ram at his passing away."

Dr. Zaheer later placed wreaths on the bier of late Lala Shri Ram on behalf of CSIR and Central Glass & Ceramic Research Institute on the Executive Council of which he was the Chairman.

PERSONAL

Appointment

DR. M. A. V. DEVANATHAN—Senior Scientific Officer : Grade I, CECRI, Karaikudi (Dec. 6, 1962).

Promotions

Dr. S. S. MANDAL—Senior Scientific Officer : Grade I, CGCRI, Calcutta (Dec. 6, 1962).

Shri V. N. GARG, Senior Accountant, NBG, Lucknow—Accounts Officer, CBRI, Roorkee (Nov. 24, 1962).

Shri M. SURENDRAIAH, Senior Scientific Assistant, NAL Bangalore—Junior Scientific Officer, NAL Bangalore (Aug. 1, 1962).

DR. P.S. GILL

(Contd from page 1, col. 2)
Physics. He visited East Germany and the Soviet Union in 1961 on invitations from the Science Academies of the two countries. He was a Visiting Professor of Physics at Washington State University during 1961-62. The University Corporation for Atmospheric Research, Boulder, Colorado has extended him an invitation to spend some months every year there in connection with his research work.

Dr. Gill is a Fellow of the American Physical Society; the National Institute of Sciences of India; the National Academy of Sciences of India and of the Indian Physical Society. He is the past President of Physics Section, Indian Science Congress Association; Indian Physical Society; and National Academy of Sciences of India. At present, Dr. Gill is Foreign Secretary, National Institute of Sciences of India and General Secretary (out station), Indian Science Congress Association.

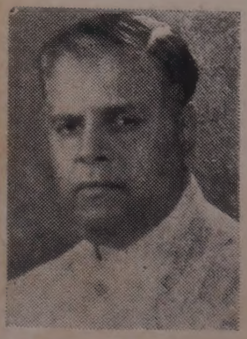
Dr. Gill has been member of the Faculties of Science of the Universities of Lucknow, Allahabad and Banaras and Dean, Faculty of Science, Aligarh Muslim University. He is a member of the Governing Body of the Saha Institute of Nuclear Physics, Indian Association for the Cultivation of Science, and of the Radio Isotopes and Lac Cess Committees of the Indian Council of Agricultural Research.

Dr. Gill represented the Indian Science Congress Association at the annual meetings of the British Association for the Advancement of Science at Norwich, U. K. (1961) and the American Association for the Advancement of Science at Danver, Colorado (1961), and the National Institute of Sciences of India on the Governing Body of the Indian Standards Institution.

Dr. Gill has a large number of publications to his credit in the fields of cosmic radiation and low energy nuclear physics.

Shri B.S. Kesavan

Shri B. S. Kesavan, Librarian, National Library, Calcutta, has been appointed Director, Indian National Scientific Documentation Centre (INSDOC).



Born on May 10, 1909 at Madras, Shri Kesavan graduated from the Mysore University and took his M.A. degree in English language and Diploma in Library Science from the University of London. As a student of Library Science, he worked in the British Museum Library, London, Bodleian Library at Oxford, and the Croydon Public Libraries. During his stay in London, he studied most of the important library systems in the country, ranging from the National Central Library to an ordinary branch library.

After this return from U.K., he served the Mysore University for nearly seven years as Assistant Professor of English. Later he held the posts of Assistant Secretary in CSIR Office of Dictionary of Economic Products and Industrial Resources of India and Educational Officer and Curator at the Central Bureau of Education. He has been holding the post of Librarian, National Library, for the last twelve years. During this period he has been responsible for building up the National Library into an internationally recognized institution.

Shri Kesavan was deputed to visit U.S.A. under the 'Leader' Programme to study libraries and educational institutions. He was a member of the International Advisory Committee on Bibliography of Unesco and a member of the Body of Experts on the International Exchange of Publications of the Unesco. He is a member of all the library associations in the country.

In recognition of his contribution in the field of library science, Shri Kesavan was awarded 'Padma Shri' in 1960.

Shri S. K. Lakshminarayana

Shri S. K. Lakshminarayana has been appointed on promotion Assistant Director, CFTRI, Mysore (w. e. f. Oct. 10, 1962).

Born on Feb. 22, 1921, Shri Lakshminarayana graduated from the Mysore University in 1942 with specialisation in Mechanical Engineering. He joined the Indian Institute of Science during the same year and worked in the Department of Chemical Engineering of the Institute for about seven years. He was appointed Mechanical Engineer, CFTRI, Mysore in June 1949. He has been associated with the research and process development activities of the Institute from the initial stages and has been in-charge of the work of design and construction of food processing equipment.

During 1959-60, Shri Lakshminarayana was deputed to France under the Indo-French Technical Co-operation Programme for a study on 'Pilot Plant Design with particular Reference to Food Processing Equipment'. He has been invited by the Indian Council of Agricultural Research to join a delegation to visit Malaya during 1963 to study its sago industry.

Shri Lakshminarayana is one of the recipients of the 'Pruthvi Prize' for the year 1958 awarded by 'The Pruthvi Trust', Bombay.

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METALLURGISTS' MEET

A five-day symposium on recent developments in iron and steel making with special reference to Indian conditions, jointly organised by the Indian Institute of Metals, the National Metallurgical Laboratory, Jamshedpur and the British Iron and Steel Institute, London will be inaugurated at Jamshedpur by Shri C. Subramaniam, Union Minister for Steel & Heavy Industries on February 4, 1963.

The symposium will provide a forum for metallurgists, research scientists, technologists and consumers to exchange technical know-how and views on latest developments in iron and steel-making with particular reference to their applications under Indian conditions. Leading scientists and metallurgists from India and abroad will present authoritative technical contributions on diverse specialized aspects. Among eminent British scientists and industrialists who are expected to participate are Sir Julian Pode, Chairman, British Iron & Steel Federation; Mr M. A. Fiennes, President, Iron & Steel Institute and Davy-Ashmore Group of Industries; and Sir Charles Goodeve, Director, British Iron & Steel Research Association.

The symposium is part of the Annual Technical Meeting of the British Iron & Steel Institute being held for the first time in India.

Lebanon Prime Minister Visits NPL

Mr Rachid Karame, Prime Minister of Lebanon visited the National Physical Laboratory, New Delhi on January 18, 1963. Dr W.M. Vaidya, Deputy Director-in-charge took him round the various divisions of the Laboratory and the Indian National Scientific Documentation Centre. Dr Husain Zaheer, D-G explained the set-up of national laboratories which covered various disciplines of scientific research on basic and applied fields. Mr Karame evinced keen interest in the working of the Laboratory.

NPL, NEW DELHI—Picture shows Mr Albert Nassif, Lebanese Ambassador (second from left), Mr Rachid Karame, Dr S. H. Zaheer and Shri I. S. Chopra, Indian Ambassador in Lebanon watching a demonstration of the metal detector

Dr Zaheer Visits CBRI and CLRI

Dr S. Husain Zaheer, Director-General, Scientific & Industrial Research visited the Central Building Research Institute, Roorkee on Jan. 14, 1963 and was taken round the various divisions and pilot plant buildings of the Institute by Shri Dinesh Mohan, Deputy Director-in-charge. Dr Zaheer addressed a meeting of the staff of the Institute and expressed his joy at being asked to spend a few hours in the Institute and acquaint himself with the useful researches being carried out at the Institute.

On Jan. 21, Dr Zaheer awarded certificates to the trainees from various Asian countries who completed the three months' course in leather tanning and finishing training arranged by the Asian Productivity Organisation at the Central Leather Research Institute, Madras. Addressing them, he said that science and technology should be fully utilised to raise productivity in the leather industry and improve its competitive position in the international market.

* * *

Dr S. Husain Zaheer, Director-General, Scientific & Industrial Research has been nominated Vice-Chairman of the reconstituted Board of Directors of the National Research Development Corporation of India.

DR H. A. B. PARPIA has been appointed Honorary Defence Coordinator, CSIR with effect from Dec. 24, 1962.

SHRI B.S. KESAVAN took charge as Director, Insdoc, New Delhi on Jan. 16, 1963.

Inauguration of NML Pilot Plant

An integrated pilot plant set up at the National Metallurgical Laboratory, Jamshedpur at a cost of Rs 50 lakhs for beneficiation of low-grade ores will be commissioned on February 7, 1963. Prof. Humayun Kabir, Union Minister for Scientific Research & Cultural Affairs will preside over the function.

BRIEFS

Refresher Courses for Highway Engineers

Two refresher courses, one from Aug. 1 to Nov. 30, 1962 for junior highway engineers and the other from Sept. 3 to 17, 1962 for senior highway engineers were organised by the Central Road Research Institute, New Delhi.

Thirty highway engineers from Public Works Departments of various states, Engineer-in-chief's Branch of Army Headquarters, Border Roads Organisation and Municipal Corporation attended the courses; the senior course was attended by 18 engineers and the junior course by 12.

Started in 1962, holding of the refresher courses twice a year forms an important part of the Extension Service of the Institute.

Earthquake Engineering Symposium

The second symposium on Earthquake Engineering was held at the School of Research and Training in Earthquake Engineering, Roorkee University, Roorkee, from November 10 to 12, 1962. Delegates from India and about 60 from abroad, including two from Japan attended the symposium. Forty-one technical papers contributed by authors from India, U.S.A., Japan and U.K. were read during five technical sessions.

A demonstration of the vibration of a model of Ram Ganga dam was arranged on the newly designed and constructed vibration table. New equipments, mostly designed and constructed at the School, such as structural response recorders, special amplifiers and pick-ups, brick-wall testing apparatus, were also demonstrated.

Fluid Machinery Symposium

A symposium on Fluid Machinery was held under the auspices of the Electrical and Mechanical Engineering Research Committee of the Council of Scientific & Industrial Research at the P.S.G. College of Technology, Coimbatore on Nov. 15 & 16, 1962. The symposium was inaugurated by Shri Mahavir Prasad, Irrigation Adviser to the Government of India and Chief Engineer, Exploratory Tubewells Organisation, New Delhi.

About 50 delegates from 28 organisations including industries and educational research institutions attended the symposium. Among the distinguished foreign delegates were Dr Thom from the Department of Fluid Mechanics and Aeronautics, University of Glasgow, Dr O.E. Baljee, Engineering Consultant in Turbo Machinery, Los Angeles, U.S.A., Prof. M. P. W. Moore, Visiting Professor, College of Engineering and Technology, New Delhi and Prof. Frank Roop, Visiting Professor, College of Engineering, Guindy, Madras.

Eighteen papers from India and abroad on topics covering design and development of pumps, turbines and compressors, cavitation research in pumps, development of flow meters, stabilisation of surge tanks etc. were presented and discussed.

Aquatic Angiosperms : Botanical Monograph No. 3

This 196-page illustrated monograph (Author : Dr K. Subrahmanyam)—the third in the series of monographs initiated by CSIR—brings together in a compact form information on the common water plants of India with appropriate keys useful for identification. It deals with the anatomy, embryology, ecology and medicinal uses and chromosome numbers of the various plants. An attempt has also been made to straighten out the nomenclature of taxa dealt with.

The monograph will be of interest not only to field botanists but also to research workers and other students of botany.

Reservists for Army & Air Force

The following members of staff of the National Aeronautical Laboratory, Bangalore who have been called to colours as reservists for emergency service by the Ministry of Defence, have been relieved of their duties :

SHRI M. KRISHNA—Armed Guard (Nov. 13, 1962)
SHRI R.F.D. PRASAD—Watchman (Nov. 20, 1962)
SHRI M. NATARAJAN—Watchman (Nov. 20, 1962)
SHRI A. PHALGUNAN—Driver (Nov. 26, 1962)
SHRI K.T. RAMANATH—Senior Laboratory Assistant (Nov. 27, 1962).

Earthquake Engineering School Inaugurated

Dr S. Husain Zaheer, Director-General, Scientific & Industrial Research formally inaugurated the School of Research & Training in Earthquake Engineering at the University of Roorkee on January 14, 1963. He was later shown round the laboratories of the School. He took great interest in its activities and particularly the equipment designed and manufactured at the School.

SCHOOL OF RESEARCH AND TRAINING IN EARTHQUAKE ENGINEERING, ROORKEE—Dr Jai Krishna, Director of the School explaining the details of structural response recorder designed and fabricated at the School

RESEARCH IN PROGRESS

National Laboratories

CFTRI, MYSORE

Pre-cooked, Dehydrated Rice and Dhal—With a view to preparing dehydrated pre-cooked products having greatly reduced cooking time, investigations have been carried out with rice and dhal as a first step. Washed rice was partially pre-cooked in the presence of definite quantities of water under controlled conditions and subsequently dried at 70-80° either in a cross-flow drier or a rotary (macaroni) drier. Pre-cooked, dehydrated dhal was prepared under almost the same conditions with temperature not being allowed to go beyond 70° during drying. The reduction in cooking time of rice was about 13 min. and in dhal, about 24 min. Addition of 3 per cent hydrogenated groundnut oil to rice during pre-cooking had a beneficial effect both on its reconstitution characteristics and shelf-life. Excellent products were obtained with three commercially important varieties of rice, Basmati, Bangara Sanna and Pachodi.

CBRI, ROORKEE

Prefabricated Timber Hut—A prefabricated timber hut with collapsible timber trusses has been evolved in consultation with the Army authorities and based on their requirements and designs. The hut can be used by the Army in plains and semi-mountainous regions. The collapsible timber truss is built up of 8 ft long timber scantlings, weighs 160 lb. and can be readily handled and transported in one-ton trucks. The size of the truss in the folded position is 8 ft × 1 ft 5 in., which opens out to cover an internal floor area of 19 ft 3 in. × 8 ft. The roof covering and cladding consist of corrugated galvanised iron sheeting with plywood lining for permanent use in the plains. For cold climates, mineral wool insulation and timber flooring are provided. The cost of a 4-bay hut for use in plains works out to Rs. 7.40 per sq. ft of floor area and that for use in cold climates works out to be Rs. 11.00 per sq. ft of floor area. The frames permit use of temporary cladding such as thatch, bamboo lathing plaster, sundried bricks with consequent reduction in cost—V. V. Sasidaran & J. S. Sharma.

Sponsored Research

Vibrational Spectra of Octahedral Water Complexes in Hydrated Sulphates—It is well known that water molecules are octahedrally arranged around the cations in many hydrated sulphates like $MgSO_4 \cdot 7H_2O$, $ZnSO_4 \cdot 7H_2O$, $NiSO_4 \cdot 7H_2O$, etc. The vibrational spectra of such groups in sixteen inorganic hydrated sulphates have been critically discussed. The totally symmetric frequencies of these complexes have been calculated making use of Badger's rule and the observed cation-oxygen distances. By a comparison with the calculated values, the observed totally symmetric frequencies in all these cases have been uniquely assigned. Employing a modified central force field system, all the mean vibrational frequencies have been theoretically evaluated. These frequencies are found to occur in 100-500 $cm.^{-1}$ region. A series of extremely feeble lines observed in the Raman spectra of many of these sulphates in 500-900 $cm.^{-1}$ region have been explained as the overtones and combinations involving the frequencies of the octahedral complexes, crystal lattices and SO_4 ions—V. Ananthanarayanan & R.S. Krishnan, Department of Physics, Indian Institute of Science, Bangalore.

Biological Studies on Vitamin A—Evaluation of the biological activity of vitamin A acid against a standard vitamin A acetate and search for the 'active form' of vitamin A were taken up for study. Vitamin A acid was found to be 50 per cent as active as the acetate, when given orally to rats and 135 per cent as active when given intraperitoneally. Deficient rats, when given 10 μg. or more of vitamin A acid per day, drank more water and excreted less urine and gained about 10 g. per day, as against about 3 g. per day by the corresponding acetate fed rats. A single dose of 500 μg. of vitamin A acid was able to maintain the normal growth of rats for 25 days.

The results point to the conclusion that vitamin A acid is probably nearer to the active form of vitamin A and that animals can absorb and store some unknown form of the vitamin A acid, if not the acid itself—J. Ganguly & K. Subba Rao, Department of Biochemistry, Indian Institute of Science, Bangalore.

Hydrogenation Nickel Catalysts—Catalytic activity of wet-reduced nickel catalysts prepared from nickel formate at different temperatures (240-260°) in the presence of refined groundnut oil and refined coconut oil was compared with that of a commercial catalyst (Rufert) by carrying out hydrogenation of groundnut oil at 180° using 0.015 per cent nickel on the weight of oil. The catalyst prepared in refined groundnut oil at 255° had the best activity although poor filterability, but that prepared in the presence of coconut oil was unsuitable. Further, re-use trials

CBRI, ROORKEE—Prefabricated timber hut under construction

with the former showed that it was comparable to the Rufert catalyst—M.T. Jetly & D. Rebello, Department of Chemical Technology, Bombay University, Bombay.

PERSONAL

Appointment

SHRI M. S. KESHAV—Senior Scientific Officer, Grade: II, CMERI, Durgapur (Nov. 23, 1962).

Promotions

SHRI B.K. ABROL, Junior Scientific Officer, RRL, Jammu—Senior Scientific Officer: Grade II, RRL, Jammu (Jan. 14, 1963).

DR C. P. AGARWAL — Assistant Editor, Publications & Information Directorate, CSIR, New Delhi (Jan. 21, 1963).

SHRI K. K. CHOPRA — Section Officer, CSIO, New Delhi (Jan. 16, 1963).

Resignations

SHRI Y.P. GOEL—Clerk-of-Works, CMERI, Durgapur (Jan. 7, 1963).

DR R.P. SETHI has been relieved from his assignment as Pool Officer with effect from December 31, 1962 consequent on his appointment as Lecturer in Jaswant College, Jodhpur.

Nominations

DR D.S. DATAR, Deputy Director-in-charge, CSMCRI, Bhavnagar has been nominated member of the Board of Directors of the Hindustan Salts Ltd, Jaipur.

DR B. R. NIJHAWAN, Director, NML, Jamshedpur has been nominated member of the Punjab State Industrial Planning & Development Board.

Dr M. S. KRISHNAN, Director, National Geophysical Research Institute, Hyderabad has been nominated member of the Organizing Committee for the International Geological Congress set up by the Ministry of Mines and Fuel.

Shri S. S. Verma

Shri S.S. Verma has been appointed on promotion Assistant Director, CGCRI, Calcutta (w.e.f. Nov. 23, 1962).

Born on Dec. 1, 1917 at Bharatpur in Rajasthan, Shri Verma had his early education in New Delhi and higher education at the Colleges of Science and Technology, Banaras Hindu University, where he obtained his M. Sc. (Tech.) degree in 1939. Before joining CGCRI in 1951 he worked in CSIR Research Laboratories, Delhi for about 3 years (1942-45), and later in the vitreous enamel industry for about 8 years.

Shri Verma has carried out investigations on substitution of imported key raw materials in vitreous enamel glasses, low melting eutectic glass compositions, enamels for glass, aluminium and copper, enamel stains, white enamels for direct application on steel, hydrogen diffusion in steel, etc.

Shri Verma has published a number of papers and has 9 patents to his credit. He is a member of the Indian Ceramic Society and the Calcutta Productivity Council.

Dr R. L. Thakur

Dr R.L. Thakur has been appointed on promotion Assistant Director, CGCRI, Calcutta (w. e. f. Nov. 23, 1962).

Born on October 31, 1920 at Warispur in Bihar, Shri Thakur obtained his B.Sc. degree from the Patna University in 1942 and B.Sc. (Tech.) degree from Banaras Hindu University in 1945. In 1946 he went to U.S.A. for higher studies and obtained his M.S. degree from the Alfred University in 1947 and Ph.D. from the Pennsylvania State University in 1950. Dr Thakur worked on U.S. Office of Naval Research Projects concerning colour of minerals and effect of noble and non-noble gas-type ions on low temperature viscosity of glasses from 1948 to 1950 at the College of Minerals Industries, Penn State and on a U.S. Signal Corps Project concerning preparation of crystals and high-dielectric materials at the College of Physics, Penn State from 1950 to 1952. He joined CGCRI, Calcutta in 1953 and is working on nucleation and controlled crystallisation and sintering.

Dr Thakur has been the Editor of the Institute's journal from the very inception. He is member of the following societies: Sigma XI (research), Sigma Gamma Epsilon (earth sciences) and Keramos (ceramics).

Process Leased Out

Improved technique for low temperature carbonization of coal—A novel technique in low temperature carbonization of coal has been developed by the Central Fuel Research Institute, Jealgora. The technique consists of recirculation of either producer gas, water gas, coke oven gas, low temperature carbonisation gas, complete gasification gas or an admixture of two or more of these or similar gases through the retorts.

By application of this technique the prototype Low Temperature Carbonization Plant of the Institute gave increased throughput of more than 60 per cent of its normal capacity, higher yield of coke and gas of higher calorific value. Consequently, the heat requirement for carbonization was considerably reduced.

Adoption of this technique will lead to considerable savings in capital cost of installation of Low Temperature Carbonisation Plants and consequently lower the cost of production. The coke will be specially suitable for domestic and industrial use.

The technique, covered by Patent No. 68680, has been leased out for commercial exploitation to Coke Oven Construction Co., Calcutta for a period of 14 years exclusively for the present States of West Bengal and Bihar with the right to issue sub-licence to their German associates, Karl Still.

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R.N. 4212/5

CSIR NEWS

VOL. 13 FEB. 11, 1963 : MAGHA 22, 1884 NO. 3

COORDINATION OF SCIENTIFIC RESEARCH FOR DEFENCE

A seven-member Steering Committee with Dr S. Husain Zaheer, Director-General, Scientific & Industrial Research as chairman, and Dr S. Bhagavantam, Scientific Adviser to the Minister of Defence; Lt-Gen. R. K. Kochar, Quarter Master-General; Lt-Gen. Umrao Singh, Master General of Ordnance; Rear Admiral D. Shanker, Controller General of Defence Production; and Drs G. P. Kane and B. D. Kalelkar, Senior Industrial Advisers, Department of Technical Development, Ministry of Economic and Defence Co-ordination as members, has been set up to act as the focal point of reference of scientific and technical problems of defence interest in which the national laboratories could assist. The Steering Committee met in New Delhi on Jan. 29, 1963 with Dr Zaheer in the chair. Progress of research work on various defence problems undertaken by the laboratories was reviewed. It was decided to create defence cells in the Central Electrochemical Research Institute, Karaikudi, National Physical Laboratory, New Delhi and National Metallurgical Laboratory, Jamshedpur to work on problems of defence interest.

In order to identify specific problems and start work on them, it was decided to constitute a number of working groups consisting of representatives of CSIR and various wings of the Defence Organisations.

A Defence Coordination Unit has already been formed to look after the work of the Steering Committee and to provide expeditious assistance to the various Defence Organisations and the national laboratories.

Scientific Journals Publication Policy

The following recommendation of the Publications Committee of CSIR relating to a policy for the publication of scientific journals by national laboratories has been accepted and it is to be implemented with immediate effect :

"The publication of research journals should be left to the Council's Publications and Information Directorate which has been organised and staffed to meet the needs of the Council as a whole.

"Individual laboratories may issue bulletins containing information for industry and also house journals. The increasing attention paid to applied research necessarily implies that more attention should be paid to the communication of research results to industry, including liaison, for promoting industrial innovation. Effective communication with industry is the basis of research utilization and the work of Survey and Information Divisions of national laboratories should be geared to this important task and the publication of original results should be left to research councils and learned societies."

Dr S. H. Zaheer

Dr S. Husain Zaheer, Director-General, Scientific and Industrial Research left New Delhi on Jan. 31, 1963 as a member of the Indian delegation to participate in the United Nations Conference on the Application of Science and Technology for the Benefit of Less Developed Areas to be held at Geneva from Feb. 4 to 20, 1963. He will be the Discussions Leader of four sessions in the Conference. The delegation is led by Prof. M.S. Thacker, Member of Planning Commission.

En route, Dr Zaheer will halt at Frankfurt for discussions with industrialists on the latest methods of pressure gasification of coal for production of gas, which may lead to considerable economy in expenditure on fuel in Indian industry. A Rs 21-lakh scheme for installing a coal gasification plant at the Regional Research Laboratory, Hyderabad will also be finalised.

Dr Zaheer will also visit U.K. where he will discuss scientific problems of mutual interest with scientists and the Department of Scientific and Industrial Research.

M E E T I N G

A meeting of the Geological & Mineralogical Research Committee will be held on February 25, 1963 at 10-30 a.m. in the Conference Hall of CSIR Secretariat, New Delhi. Dr D.N. Wadia, Chairman, Geological & Mineralogical Research Committee will preside.

Committee for Information Scientists' Conference

A committee consisting of Shri B.N. Sastri as convener, and Dr H.A.B. Parpia, Shri Baldev Singh and Shri A. Rahman as members has been constituted to organise a conference of information scientists of national laboratories.

P E R S O N A L

Appointments

DR P.S. AGARWAL—Senior Scientific Officer: Grade II, CGCRI, Calcutta (Jan. 1, 1963).

DR. BHAN BHUSHAN—Senior Scientific Officer: Grade I, GGCRI, Calcutta (Jan. 21, 1963).

Promotion

SHRI K.C. SRIVASTAVA—Senior Scientific Officer: Grade II, NPL, New Delhi. (Dec. 2, 1961.)

Resignations & Retirement

SHRI M. N. SRINIVASAN—Junior Scientific Officer, NAL, Bangalore (Dec. 18, 1962).

SHRI A.K. POTE—Junior Scientific Officer, NML, Jamshedpur (Dec. 1 1962).

SHRI P. M. NEOGI relinquished charge of the post of Senior Technical Officer, BITM, Calcutta on the afternoon of Dec. 31, 1962 consequent on the expiry of the period of his re-employment.

SHRI C.L. PAL relinquished charge of the post of Accounts Officer, CBRI, Roorkee on Nov. 24, 1962 consequent on the expiry of the extended period of his appointment.

* * *

SHRI K. VENKATACHALAM, Senior Scientific Officer, NAL, Bangalore left for U.K. on Jan. 2, 1963 for a

(*Contd on p. 4, col. 1*)

BRIEFS

Cement Research

A Cement Research Institute of India has been set up at Bombay by the Cement Manufacturers' Association. Financial assistance towards both capital and recurring expenditure of the Institute is provided by the Council of Scientific and Industrial Research under its scheme of promotion of cooperative research by industry for industry.

The work of the Institute will cover basic and applied research, design and development studies, library and information services and technical advice for member firms.

French Aid to IIP

An electronic impulse counter (costing Rs 1.8 lakhs) was presented to Dr S. Husain Zaheer, Director-General, Scientific & Industrial Research by His Excellency J.P. Garnier, French Ambassador to India at a function held in the French Embassy, New Delhi on Jan. 29, 1963. The equipment is a gift from the French Government to the Indian Institute of Petroleum, New Delhi.

U.S. Agriculture Dept. Aid

A five-year agreement has been entered into between the U. S. Department and the Council of Scientific & Industrial Research according to which the U.S. Department of Agriculture will provide assistance to the tune of Rs 4.41 lakhs to the National Chemical Laboratory, Poona for investigation on the synthesis and properties of new type glycol monoalkyl ethers for the control of water evaporation, to extend the industrial utilization of cottonseed oil.

Also, the Department will offer assistance to the tune of Rs 1.15 lakhs to the Regional Research Laboratory, Hyderabad for exploratory investigations of selected hydroxylated derivatives of linseed, safflower and soyabean to determine the feasibility of producing new industrial products from these oils.

Leather in Our Daily Life

An illustrated popular folder entitled *Leather in Our Daily Life* has been brought out by the Publications and Information Directorate, CSIR.

The folder deals with the contribution of the Central Leather Research Institute, Madras to the progress and development of the age-old Indian leather industry by creating an awakening to the need and importance of research for improving processes and products.

Organizing Technical Conferences

This 12-page brochure, brought out by the Publications and Information Directorate, CSIR contains suggestions regarding planning and organizing technical conferences, particularly symposia. Attention is drawn to the handling of papers presented for discussion and the publication of proceedings. Guidance to authors for preparation of papers is also given.

CECRI Memoirs, 1962

This volume contains a collection of reprints of 41 papers contributed by the staff of the Institute. Reprints of some papers published earlier than 1962 but which became available only during 1962 have also been included.

* * *

The *National Register of Scientific and Technical Personnel* (*Indians Abroad with Supplement*), Series ST, No. 15 (Nov. 1962) has been published. Brief particulars of 138 scientists and 36 technologists with foreign qualifications and 49 scientists and technologists with high Indian qualifications are listed in the 59-page directory, priced Re 0.75.

New Ph.Ds

SHRI S. RAMACHANDRA, Senior Scientific Officer : Grade I, CMRS, Dhanbad. Thesis : *Hydrodynamical problem in lubrication* (Indian Institute of Technology, Kharagpur).

SHRI P.N. MUKHERJEE, Senior Scientific Officer, CFRI, Jealgora. Thesis : *Surface reaction on coal* (Calcutta University).

SHRI C. BHUVANESWARAN, Junior Scientific Officer, CFTRI, Mysore. Thesis : *Studies in heme protein synthesis* (Mysore University).

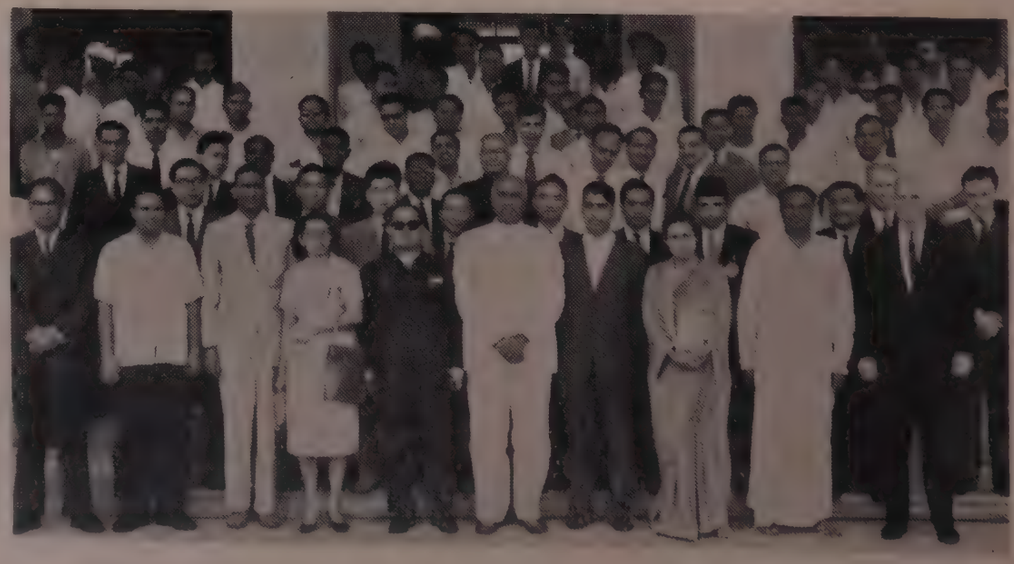
SHRI P.M. NAHA, Junior Scientific Assistant, CSIR scheme, Production of antibiotics by *Streptomyces* spp. Thesis : *Studies on the production of antibiotic by Streptomyces strain* $AC_{14}475$ (Calcutta University).

SHRI R.C. SRIVASTAVA, Junior Research Assistant, CSIR scheme, Thermodynamic properties of mixtures. Thesis : *Studies in thermodynamics of irreversible process* (Panjab University).

SHRI W.K. BEHL, Junior Research Fellow, CSIR scheme, Electrochemical investigations in fused salt media. Thesis : *Polarographic studies and standard electrode potential measurements in molten magnesium chloride-sodium chloride-potassium chloride eutectic as solvent* (Delhi University).

CSIR Contributions to NDF

The total contributions to the National Defence Fund received up to Jan. 9, 1963 from members of the staff of the national laboratories and CSIR Secretariat amounted to Rs 89,295.41. Besides, gold ornaments weighing 153.63 grams have been received from some of the members of the staff.



CLRI, MADRAS—Asian Productivity Organisation trainees and invitees with the staff of the Institute

RESEARCH IN PROGRESS

National Laboratories

CDRI, Lucknow

Meat Extract Concentrate and Peptone—An integrated process has been developed for the preparation of meat extract concentrate and peptone—important constituents of media used for growing microorganisms for the production of vaccines, anti-toxins and antibiotics—using meat residues from slaughter houses. The peptone compares well with the imported brands, such as Oxoid and Difco, in supporting the growth of nutritionally exacting pathogenic bacteria. These constituents are not indigenously manufactured at present.

CRRI, New Delhi

Subgrade Restraint under Prestressed Concrete Pavements—Investigations has been carried out on reducing the loss in prestress due to the restraint offered by subgrade to slab movement in long prestressed slabs, when the usual constructional techniques are adopted. As a result, a technique has been developed. It consists in floating the slab with the help of air tubes at the time of prestressing. Semi-field scale trials have shown that the loss in prestress can be reduced by about 20 per cent. Further, high tensile steel requirement can be reduced by 40-50 per cent.

Expansion Joint Filler Boards from Coconut Pith—A process has been developed for the preparation of expansion joint filler boards from coconut pith, a waste material of coir industry. The process consists in mixing the pith with binding mixtures and subsequently hot pressing. The boards thus prepared are resistant to microbial attack and conform to the A.S.T.M. specifications for expansion joint fillers for concrete pavements and other structures.

RRL, Jammu & Kashmir

Introduction of Solanum ariculare—This exotic plant from U.S.S.R. has been introduced for cultivation in Kashmir. The leaves yield 0.3 per cent of alkaloids (calculated as solasodine) and three harvests can be collected in a year which are estimated to yield 800 kg. of leaves per acre. Solasodine is used as a starting material for the manufacture of sex hormones and other steroid compounds.

Sponsored Research

Vitamin A Metabolism—Enzymic mechanism by which the rat liver transforms vitamin A alcohol into vitamin A aldehyde and vitamin A acid was studied using rats as experimental animals. Rat liver supernatant was able to convert vitamin A aldehyde to the alcohol and the acid. Saturation with ammonium sulphate up to 45 per cent completely precipitated the retinene oxidising enzyme, while 45-70 per cent saturation precipitated the retinene reducing enzyme. The latter activity was reversible, while the former was not. The results point to the conclusion that rat liver possesses mechanisms to convert vitamin A alcohol to the aldehyde and to the acid, and that these two reactions are catalysed by two distinct enzymes- S. KRISHNA MURTHY & J. GANGULY, Department of Biochemistry, Indian Institute of Science, Bangalore.

Effect of Glutamic Acid on Mental Defficiency—The relation of Mongolism stigmata to intellectual status and the effect of glutamic acid on mental deficiency in children have been investigated. The investigation included clinical and neurological check-up; examination of ear, nose, throat, urine, stool and X-ray examination of skull, and psychological tests such as Perteus Maze test, Alexander's Block Design test, Raven's Progressive Matrices test and Vineland Social Maturity Scale. The study has led to the following conclusions: Glutamic acid is effective (in slight degree) of subnormals. The improvement (with respect to animation, interest, contact with environment, concentration, movement of efficiency, vocabulary) in children with weakened psychomotor activity is more evident. There is no improvement after six months of therapy. The treatment cannot develop new intellectual capacities but actualizes the existing inclinations. There is no improvement of speech when disturbances are due to aphasia. Constant treatment with glutamic acid alone, without recourse to any other anti-epileptic drug, stops fits—D. SARBADHIKARY & T.K. GHOSH, Department of Neurology, S.S.K.M. Hospital, Calcutta.

Studies in Inorganic Complexes—The composition, stability and spectral characteristics of the chelates of scandium, yttrium, indium and palladium with sulphodichlorohydroxy dimethyl fuchson dicarboxylic acid (Chrome Azurol S), sodium alizarin-3-sulphonate and *P*-nitrobenzene-azo-chromotropic acid have been determined. The first two reagents have given satisfactory results in determination of traces of palladium.

Chrome Azurol S and 1-*ortho* (arsenophenyl azo) 2-naphthol-3:6-disulphonate have been particularly useful for the complexometric determination of lanthanum and rare earths—A.K. Dey, S.N. Sinha & K.N. Munshi, Allahabad University, Allahabad.

Research Papers

A.K. Deb & Subhash Chandra, (CBRI, Roorkee)—Under-reamed pile foundations in black cotton soils, *Cement & Concr.*, **3**(3) (1962), 45-50.

G. S. Ramaswamy, (CBRI, Roorkee)—Economical roofs for industrial and storage structures. *Cement & Concr.*, **3** (3) (1962), 51-60.

S. Sen, (CGCRI, Calcutta)—Changes in the physical properties of a kaolinite clay on heating and their structural implications. *Trans Indian ceram. Soc.*, **21** (2) (1962), 49.

B.V.K.S.R.A. Tilak, S.R. Rajagopalan & A.K.N. Reddy (CECRI, Karaikudi)—Buffer characteristics of manganous sulphate and ammonium sulphate electrodeposition of baths. *Trans. Faraday Soc.*, **58** (1962), 795-804.

R. Vijayavalli, S. Ghosh & H.V. K. Udupa (CECRI, Karaikudi)—Preliminary results of superimposition of a.c. on d.c. in the anodic oxidation of lead in sulphuric acid. *Bull. Acad. Pol Sci. Chim.*, **10** (1962) 13-18.

B.A. Shenoi, K.S. Indra & K. Vijayalakshmi (CECRI, Karaikudi)—Bright finishing of super-purity aluminium : Part II—Anodising. *Metal Finish.*, **60** (5) (1962), 49-53.

PERSONAL

(*Contd from p. 1, col. 3*)

nine-month training in Erection, testing, operation and maintenance of compressor dryer equipment at the Associated Electrical Industries Ltd, Rugby.

DR ATMA RAM, Director, CGCRI, Calcutta has been elected member of the Council of the National Institute of Sciences of India. He has also been re-elected member of the Indian Science News Association.

DR B. R. NIJHAWAN, Director, NML, Jamshedpur has been nominated member of the Board of Directors of the National Mineral Development Corporation and the National Research Development Corporation of India.

DR Y. NAYUDAMMA, Director, CLRI, Madras has been nominated member of the Board of Directors of the National Research Development Corporation of India.

DR A. SREENIVASAN, Deputy Director, CFTRI, Mysore has been nominated member of FAO/WHO/UNICEF Protein Advisory Group of the World Health Organisation.

SHRI A. BHARADWAJ, Architect, CSIR, New Delhi has been elected Fellow of the Indian Institute of Architects.

DR L.D. KAPOOR, Senior Scientific Officer, RRL, Jammu has been elected Fellow of the Indian Academy of Sciences.

DR K. T. ACHAYA, Assistant Director, RRL, Hyderabad has been nominated member of the Ad-hoc Committee set up by the Indian Central Oilseeds Committee to review the project at the Oil Technological Research Institute, Anantapur.

DR V. JAGANNATHAN, Assistant Director, NCL, Poona has been nominated member of the Indian National Committee for Type Cultures of Micro-organisms of the Ministry of Scientific Research & Cultural Affairs.

Shri K. Mahadevan

Shri K. Mahadevan has been appointed Assistant Director, CMERI, Durgapur (w.e.f. Jan. 1, 1963).

Born in Kumbakonam (Feb. 15, 1924), Shri Mahadevan obtained his B.E. degree in mechanical engineering from the Madras University in 1946. He worked as Assistant Instructor in mechanical engineering at the College of Engineering, Guindy and later joined the Department of Agriculture, Government of Madras as Agricultural Engineering Supervisor. Between 1947 and 1949 he worked as the first technical secretary to the Internal Combustion Engines Research Committee of CSIR. In 1949, he was oppointed Lecturer in the Indian Institute of Science, Bangalore, and in 1955 he became Assistant Professor in the Internal Combustion Engineering Department of the Institute.

Shri Mahadevan has considerable experience in post-graduate teaching and research in the field of internal combustion engineering, heat transfer, combustion and automobile engineering, and has published several papers. He visited U.S.A. as a T.C.M. scholar and worked on the problem of ignition delay in diesel engines at the University of Wisconsin, Madison. He is a member of the Society of Automotive Engineers, U.S.A.

He is the first recipient of the award of M.I.I.Sc. (Membership of the Indian Institute of Science) in 1956 for his thesis entitled 'Experimental studies on a cyclone chamber for combustion and gasification of heavy liquid fuels'.

Dr B. Singh

Dr B. Singh has been appointed Assistant Director, Central Mining Research Station, Dhanbad (w.e.f. Jan. 1, 1963).

Born on July 10, 1931, Shri Singh took his B.Sc. degree from the Banaras Hindu University in 1950. In 1951 he left for U.K. for studies in Mining Engineering at the Sheffield University where in 1955 he got the B.Eng. (Hons) degree and was awarded the British Ropes Ltd Prize in Mining. After undergoing training in different coal mines, he joined King's College, Durham University in 1956 and worked on a National Coal Board (U.K.) project concerning strata control under Prof. E. L. J. Potts. On completion of the project work in June 1959 he was awarded Ph.D. degree.

His researches on ignition of fire damp (methane) by heated surfaces fetched him M.Eng. degree in Fuel Technology of the Sheffield University in 1961. In the same year he was commissioned by a group of coal mining companies in Ruhr Coalfield, West Germany to advise, investigate and make a report on the safety organisation in their mines and to suggest improvement. From Sept. 1961 to Dec. 31, 1962 he served the Bengal Coal Co. Ltd.

Dr Singh holds first class Colliery Manager's Certificate as well as the Associate Membership of the Institution of Mining Engineers (London). He is the Fellow of the Geological Society of London, Member of Mining, Geological and Metallurgical Institute of India and Indian Mine Manager's Association. He has published 18 technical papers, mostly in foreign journals.

PATENTS & PROCESSES

Patents Filed

85527 : *Improvements in or relating to a process for the oxidation of hydrocarbons*—R.T. Thampy, M.S.R. Rao & B.S. Trehan, Shri Ram Institute for Industrial Research, Delhi.

85608 : *An anti-stripping agent for road binders*—S. Bagchee, CRRI, New Delhi.

85787 : *Improvements in or relating to the manufacture of roads with core shell or different materials*—G.D. Joglekar & C.L. Verma, NPL, New Delhi.

85788 : *Improvements in or relating to a process for the production of maleic anhydride*—R.T. Thampy, S.K. Bhatnagar & B.S. Trehan, Shri Ram Institute for Industrial Research, Delhi.

Patent Accepted

U.K.

912786 : *Improvements in or relating to a vehicle lamp fitting for vehicles*—C.R. Gupta, NPL, New Delhi.

Patent Sealed

Pakistan

111825 : *Improvements in or relating to the production of alpha—halotoluenes*—S.H. Zaheer, B. Singh, B. Bhushan, S.I. Ahmed, I.K. Kacker, V. Krishnamurthy & M.Z. Ahmed, RRL, Hyderabad.

Processes leased out

The following processes developed by the National Metallurgical Laboratory, Jamshedpur have been leased out for commercial development to some more parties as indicated against their names :

Liquid gold—*Universal Chemical Industries*, Arrah, Dhanbad Dist.

Hot dip aluminising of ferrous materials (Indian Patent Nos 55289, 57938 and 65230)—*Orient Wire Industries Private Ltd*, Calcutta & *Golden Shaft & Wire Industries*, Howrah.

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CSIR NEWS

VOL. 13 FEB. 25, 1963 : PHALGUNA 6, 1884 NO 4.

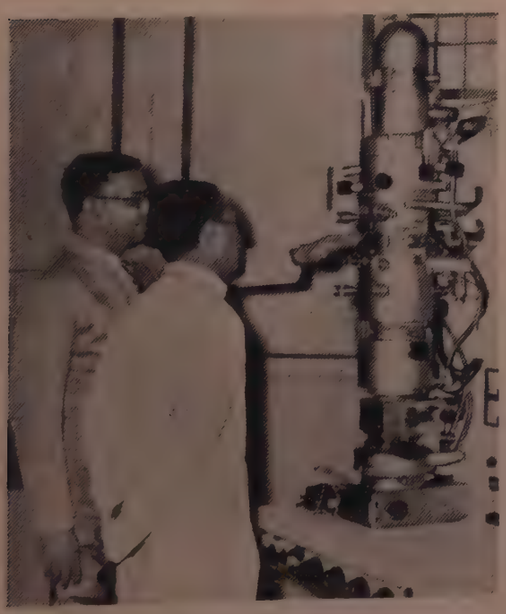
DR ZAHEER PARTICIPATES IN UN CONFERENCE

Dr. S. Husain Zaheer, Director-General, Scientific & Industrial Research, participated in the U.N. Conference on Application of Science & Technology for the Benefit of the less developed Areas (Feb. 4-20, 1963). He presented papers on fertilizers, heavy chemicals and special problems of scientific policy planning and initiated discussions on the first two papers as discussion leader. He referred to the usual practice of the Indian entrepreneur collaborating with foreign manufacturing interests in production and marketing of products with trade marks backed by years of advertisement and how this acts as a deterrent to the production and marketing of similar products based on indigenous research. Unless a method is found by which this exploitation of trade marks from the advanced countries is prevented, indigenous applied research will be frustrating and infructuous.

New Division of CLRI Opened

A new Biophysics Division was formally declared open on Feb. 1, 1963 at the Central Leather Research Institute, Madras by Prof. Humayun Kabir, Union Minister for Scientific Research & Cultural Affairs and Vice-President, CSIR. A West German-made electron microscope which can magnify objects 2,00,000 times has been acquired for this Division.

A cheque for Rs. 5,154.97 was presented to Prof. Kabir by Dr Y. Nayudamma as contributions from the staff and the staff club for the National Defence Fund.



CLRI, Madras—Dr N. Ramanathan, Asst. Director, explaining the working of the electron microscope to Prof. Kabir

Dr. S. Husain Zaheer

Dr S. Husain Zaheer, Director-General, Scientific & Industrial Research, has been appointed *ex-officio* Secretary to the Government of India in the Ministry of Scientific Research & Cultural Affairs.

M E E T I N G

A meeting of the reconstituted Biological Research Committee, will be held on Tuesday, March 5, 1963 at 10.00 a.m. in CSIR Conference Room. Prof. P. Maheshwari, Chairman of the Committee will preside.

Ore Beneficiation Plant Commissioned

The integral mineral beneficiation pilot plant set up by the National Metallurgical Laboratory, Jamshedpur was inaugurated on Feb. 7, 1963. Lady Goodeve, wife of Sir Charles Goodeve, Director, British Iron & Steel Research Association, declared the plant open. Shri Jehangir Ghandy, Director-in-charge, Tata Iron & Steel Co. Ltd. presided over the inaugural function and Prof. Humayun Kabir, Minister for Scientific Research & Cultural Affairs, and Vice-President, CSIR, addressed the gathering.

P E R S O N A L

DR D.S. DATAR took charge, as Deputy Director-in-charge CSMCRI, Bhavnagar with effect from Feb. 6, 1963 from DR A. JOGA RAO, Assistant Director-in-charge of the Institute.

SHRI C.G. SWAMINATHAN assumed charge of the post of Assistant Director (Bitumen), CRRI, New Delhi with effect from Dec. 21, 1962.

Appointment

DR M.S. BHALLA—Senior Scientific Officer : Grade I, CEERI, Pilani (Oct. 12, 1962).

Promotions

DR B. R. MARATHE—Senior Scientific Officer : Grade II, NPL, New Delhi—Senior Scientific Officer : Grade I, CEERI, Pilani (Dec. 27, 1962).

SHRI Y. R. CHADHA—Scientific Reporter, Publications & Information Directorate, CSIR, New Delhi—Senior Scientific Officer : Grade I (Feb. 12, 1963).

SHRI G.D. BHATT. Senior Scientific Assistant, CSMCRI, Bhavnagar—Junior Scientific Officer, CSMCRI, Bhavnagar (Jan. 21, 1963).

MISS C.M. CHANDRAMATHY, Officiating Junior Technical Officer, National Register Unit, CSIR, New Delhi—Field Officer (Jan. 29, 1963).

* * *

DR S. HUSAIN ZAHEER, Director-General, Scientific & Industrial Research and DR. P. NILAKANTAN, Director, NAL, Bangalore have been nominated CSIR members on the Scientific Advisory Board for the

(Contd. on p. 4, col. 1)

B R I E F S

Iron & Steel Making

The five-day symposium on Recent Trends in Iron and Steel making with Special Reference to Indian Conditions, organized jointly by the Indian Institute of Metals, the National Metallurgical Laboratory, Jamshedpur and the Iron & Steel Institute, U. K. concluded on Feb. 8, 1963. Shri C. Subramaniam, Union Minister of Steel & Heavy Industries inaugurated the Symposium which was attended by about 300 delegates including the 90 member delegation of the Iron & Steel Institute.

Fifteen papers received from scientists and metallurgists from India and abroad were presented and discussed in the following three technical sessions : (i) Preparation and use of Indian raw materials for iron-making (Chairmen : Mr Maurice Fiennes, President, Iron & Steel Institute, U. K. & Dr B. R. Nijhawan, Director, National Metallurgical Laboratory, Jamshedpur) ; (ii) Planning and designing of new plants (Chairmen : Sir Charles Goodeve, Director, British Iron & Steel Research Association, London & Shri S. K. Nanavati, General Manager, Tata Iron & Steel Co. Ltd., Jamshedpur) ; and (iii) Choice of steel-making processes under Indian conditions (Chairmen : Dr. J. H. Chesters, Deputy Director of Research, Swinden Laboratories, United Steel Co. Ltd., U. K. & Dr M. N. Dastur, Managing Director, M. N. Dastur & Co. Ltd., Calcutta).

The concluding session was marked by a resume of the symposium by Dr B. R. Nijhawan, an address by Mr. Maurice Fiennes and brief speeches by some of the foreign delegates on their impressions about the symposium.

Prof. Kabir Opens Perchlorate Production Shed

The shed for the large scale production of perchlorate at the Central Electrochemical Research Institute, Karaikudi was formally opened by Prof. Humayun Kabir, Union Minister for Scientific Research & Cultural Affairs and Vice-President, CSIR on Feb. 2, 1963. Prof. Kabir also addressed the staff of the Institute.

A purse containing a sum of Rs. 501, was presented to the Minister as contributions from the staff for the National Defence Fund.

Corrosion and its Prevention

A one-month course on corrosion and its prevention organized for the trainees from the Defence Establishments by the Central Electrochemical Research Institute, Karaikudi concluded on Feb. 2, 1963. Prof. Humayun Kabir, Union Minister for Scientific Research & Cultural Affairs and Vice-President, CSIR distributed certificates to the trainees.

NAL, Bangalore

The National Aeronautical Laboratory, Bangalore has been recognized as a centre of research leading to advanced degrees in science and engineering by the University of Poona.

Foreign Scientists Visit CDRI and NBG

The following foreign scientists visited CDRI, Lucknow in January 1963 and delivered lectures on subjects mentioned against their names :

Dr Severo Ochoa, Nobel Laureate and Chairman, Department of Biochemistry, New York College of Medicine—Biosynthesis of RNA (Jan. 8, 1963).

Dr A.E. Mirsky, Rockfeller Institute of Medical Research, New York—Biochemistry of Cell Nucleus (Jan. 10, 1963).

Dr A.W. Johnson, Professor of Chemistry, University of Nottingham, U.K.—Vitamin B_{12} Coenzymes (Jan. 14, 1963).

Dr D.M. Brown, Cambridge University, U.K.—Chemical Mutagenesis (Jan. 18, 1963).

Prof. Carl A. Winkler of Montreal University, Canada and Dr L. Horton, Assistant Director, Tropical Products Institute, London visited the Institute on Jan. 18 & 26, 1963 respectively. Dr. Horton, also visited National Botanic Gardens, Lucknow on Jan. 25, 1963.

Dr Nijhawan Honoured

The Honorary Vice-Presidentship of the Iron & Steel Institute of U.K. has been conferred on Dr B. R. Nijhawan, Director, National Metallurgical Laboratory, Jamshedpur. Presenting him the diploma on the occasion of the inauguration of the international symposium on Recent Trends in Iron and Steelmaking with Special Reference to Indian Conditions on Feb. 4, 1963 at Jamshedpur, Mr. Fiennes, President, Iron & Steel Institute of U.K. remarked : "To him, I believe falls one of the greatest responsibilities in India today, to find solutions to some of the problems, many of them difficult, of ferrous and non-ferrous metallurgy in India. He has become almost world famous for the symposia which he has organized in Jamshedpur and has achieved great reputation for the success and for the remarkable results which flow from them. But above all he has the task of finding out, how to utilize the indigenous raw materials in the interest of India's development".

NML, Jamshedpur—Dr B. R. Nijhawan, Director being inducted to the office of Honorary Vice-Presidentship of the Iron and Steel Institute, U. K. by Mr M.A. Fiennes

RESEARCH IN PROGRESS

National Laboratories

CFTRI, MYSORE

A New Design for Grain Bins—Bins made of metal which has high thermal conductivity, when exposed to diurnal temperature fluctuations, develop high moisture pockets resulting in fungal spoilage of grains stored in them. A new design for metal bin which eliminates moisture condensation has been developed. The design consists in providing a shallow channel at the rim of the bin, which helps in collecting the condensed moisture and draining it out whenever required. Silica gel indicator tubes are used to control the operation.

Comparative trials of the newly designed metal bin with the conventional metal bin for the storage of sorghum subjected to temperature fluctuations of the order of 22°F. and more for a period of 12 months showed that, whereas the grain stored in the conventional bin was totally spoilt, the grain stored in the newly designed bin was in sound condition.

CRRI, NEW DELHI

Landslide Corrections in Hillside Roads—Highly weathered soil on mountain ridges sliding down on saturation with rain or loose dry silt flowing downhill are some of the causes for occurrence of landslides in hilly regions. Landslides are quite frequent in Northern Uttar Pradesh. They cause disruption of traffic and are thus a potential source of danger to life. A study of landslide susceptibility in this region has been undertaken. The main objective of the study is to get a correlation between the soil pattern and the landslide motion and to plan new roads avoiding unsafe formations.

CBRI, ROORKEE

Particle Boards from Coconut Husk—Investigations are in progress on the preparation of roofing panel using particle boards from unretted husks of mature coconuts. Boards of 18 mm. thickness and density, 0.64 g./cu. cm. have been prepared using only 0.5 per cent adhesive. Tests (BSS: 609 for flat A.C. sheets) have shown that the boards have an average failing load of 127 kg., the minimum requirements for A.C. sheets being 125 kg. along the grain and 89 kg. across. The pressure required for consolidating the board is also low.

Sponsored Research

Heavy Metal Soaps—A number of aluminium chloride and aluminium tri-soaps were prepared by the reaction of anhydrous aluminium chloride and fatty acids in organic solvents. The molecular weights of the soaps were determined by ebullioscopic method using a semi-micro ebulliometer. The aluminium chloride soaps were trimeric and did not show any change in molecular complexity with changing concentrations. Some oxide soaps were also prepared by heating mono-alkoxide di-soaps and mono-alkoxide monohydroxide mono-soaps under vacuum. The molecular weights of the soaps, determined similarly, showed them to be polymers of molecular complexity 9-10,

A study of the thermal decomposition of the aluminium soaps by the automatic recording thermobalance showed that they decomposed at definite stages with the formation of ketones and other side-products—R.C. MEHROTRA & A.K. RAI, Chemistry Department, Gorakhpur University, Gorakhpur.

A New Antifungal Antibiotic—As a result of extensive screening of green, ripe and rotten fruits and vegetables, and soils from surface and different profiles, a new antifungal antibiotic, has been isolated. from a strain of *Aspergillus* sp. Optimum *p*H for the production of the antifungal substance is 3.0. The antibiotic is highly active against *Trichophyton rubrum* which is responsible for 90 per cent of skin infections in Eastern India. It is also active against *Epidermophyton floccosum* and *Microsporum audouini*—S.K. BOSE, N. BANERJEE, A. BANERJEE & A.K. DHAR, University College of Science & Technology, Calcutta.

Aryl Sulphatase from Human Brain—An enzyme, purified about 300-fold, has been prepared from human brain. The enzyme is an aryl sulphatase (optimum *p*H, 4.5) and resembles the aryl sulphatase A of human liver in its kinetics, specificity and response to inhibitors, the Km value for nitrocatechol sulphate being 1.54×10^{-3}M. Mercuric and auric ions inhibit the activity of the enzyme potently and phosphate and sulphite ions act as

CRRI, New Delhi—Picture shows occurrence of landslides as a result of loose dry silt flowing downhill from above the road.

competitive inhibitors. A study of the role of the enzyme in sulphate metabolism in brain using 35S-labelled chondroitin sulphate and nitrocatechol sulphate has shown that the enzyme does not degrade chondroitin sulphate and does not transfer the sulphate of nitrocatechol sulphate to *p*-nitrophenol—B. K. BACCHAWAT, Christian Medical College & Hospital, Vellore.

Silt Ejectors—Accumulation of bed silt in canals causes reduction in cross-sectional area of the canals, leading to the reduction in discharge capacity in the case of irrigational canals, and of loss of draft in the case of navigational canals. Hence, investigations have been carried out on the removal of silt using tunnel type silt ejectors. It has been shown that for transporting suspended sediment Durand's formula (modified for rectangular sections) can be used for calculating head losses, in preference to Manning's formula. Observations made on a silt ejector model indicated that for each discharge, there is a particular sediment, intensity (critical intensity) above which there will be afflux on the upstream of the ejector. Care should, therefore, be taken to see that the sediment intensity does not increase beyond the critical intensity for the canal discharge—J. VISWESWARA RAO & V. VASUDEVA MURTHY, Department of Civil Engineering, Indian Institute of Technology, Kharagpur.

PATENTS

Patents Filed

85959 : *A reactor for carrying out high temperature reactions involving solids and gases*—K. Seshacharyulu, Y. Venkatesham, D.S. Datar & S.H. Zaheer, RRL, Hyderabad.

86155 : *Substituted phenothiazines*—Kumari Shanta Bhai Moray, G. Thyagarajan, G.S. Sidhu & S.H. Zaheer, RRL, Hyderabad.

86156 : *Amides of Pharmacological interest*—M.B. Husain, G. Thyagarajan, G.S. Sidhu & S.H. Zaheer, Hyderabad.

Patents Accepted

76414 : *Improvements in the separation of silica from black alkali from paper mills*—A.V. Rajeswara Rao, V. Venkatesham, D.S. Datar & S.H. Zaheer, RRL, Hyderabad and Majeed Mohiuddin, Orient Paper Mills, Brajrajnagar.

76683 : *Improvements in or techniques relating to filling of tubes*—G.D. Joglekar, D. Sen & S.K. Kapur, NPL, New Delhi.

77081: *Improvements in or relating to the preparation of polyamide compounds and their compositions as antipriming agents in steam generators*—K.D. Pathak & B. C. Subba Rao, NCL, Poona.

Patents Sealed

72639 : *A method of making yellow coloured bricks from alluvial soils*—L.C. Jain & P.C. Jain, CBRI, Roorkee.

73702 : *A process for the preparation of cyclopentadecanolide exaltolide*—V.V. Dheke, B.B. Ghatge & S.C. Bhattacharyya, NCL, Poona.

73978 : *An Improved rumbler for the extraction of essential oils from tight skinned citrus fruits*—J.S. Pruthi, M.N.S. Vasudeva Rao, G.M. Parekh & G. Lal, CFTRI, Mysore.

74355 : *A process for refining cottonseed oil to obtain light coloured oil and soapstock*—P.L. Narayana Rao, K.T. Achaya & S.H. Zaheer, RRL, Hyderabad.

FRANCE

1,316,785 : *Acetex process for the extraction of tar acids*—D.K. Sen, C.S.B. Nair, A.N. Basu & A. Lahiri, CFRI, Jealgora.

U.S.A.

3,070,625 : *A process for the preparation of azelaic acid semi-ester suitable for making civetone dicarboxylic acid*—U.G. Nayak, K.K. Chakravarti & S.C. Bhattacharyya, NCL, Poona.

PERSONAL

(*Contd from p. 1, col. 3*)

Institute of Tropical Meteorology, Ministry of Transport & Communications.

DR M.G. KRISHNA, Deputy Director-in-charge, IIP, New Delhi has been nominated a member of the Development Council for Organic Chemical Industries, Ministry of Commerce & Industry.

DR G.S. SIDHU, Deputy Director-in-charge, RRL, Hyderabad has been nominated a member of the Standing Advisory Committee for Large Scale Industries of Andhra Pradesh Government.

SHRI BALDEV SINGH, Industrial Liaison & Extension Officer, CSIR, New Delhi has been nominated a member of the National Productivity Council.

SHRI S.P. VENKITESHWARAN, Assistant Director, NAL, Bangalore has been nominated an external expert on the Board of Study in the Faculty on Instrument Technology, Madras Institute of Technology, Madras.

DR H. C. SRIVASTAVA, Senior Scientific Officer, CFTRI, Mysore has been nominated a member of the Fruit Committee of the Indian Council of Agricultural Research.

DR M. K. UNNI, Senior Scientific Officer, NCL, Poona has been nominated a member of the Ad-hoc Study Group for Dye & Intermediates of the Indian Standards Institution.

DR S. MUKHERJEE, Senior Scientific Officer, IIBEM, Calcutta has been nominated a member of WHO Expert Advisory Panel on Cholera.

SHRI A. BHARADWAJ, Architect, CSIR, New Delhi has been elected Fellow of the Indian Institute of Architects.

Shri S.B. Roy

Shri S.B. Roy, Senior Scientific Officer, CGCRI, Calcutta has been appointed on promotion as Assistant Director of the Institute (w.e.f. Nov. 23, 1962).

Shri Roy, born on Jan. 1, 1923 at Sombhag in the district of Dacca, East Pakistan, obtained B. Sc. (Hons) in Chemistry in 1942 and M. Sc. in Applied Chemistry from Calcutta University in 1945. During 1945-46 he worked as Chemist and Manager in a plywood factory and then proceeded to U.S.A. as a Government of India Overseas Scholar for advanced studies in Ceramics. In 1948 he obtained M S. in ceramics from the Ohio State University and thereafter worked in U.S.A. for 6 months in factories producing fine ceramics and high tension insulators. In July 1949 Shri Roy joined CGCRI and was associated with research work on ceramic problems relating to the use of raw materials like talc, pyrophyllite, nepheline, syenite, etc. He also worked on the problems of delayed crazing and high frequency dielectrics. For the last few years Shri Roy has been engaged mainly in applied and fundamental research on mica. He has 8 patents to his credit and has published 35 scientific papers, articles, write-ups and reviews. Shri Roy is a member of the Indian Ceramic Society.

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CSIR NEWS

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GOVERNING BODY & BOARD MEETINGS

A meeting of the Committee of the Board and Governing Body will be held in the Conference Room of CSIR Secretariat, New Delhi on March 22, 1963 at 11.00 a.m.

A meeting of the Finance Sub-Committee will be held in Room No. 112, Parliament House, New Delhi on March 22, 1963 at 3.00 p.m.

A meeting of the Board of Scientific & Industrial Research will be held in the Conference Room of the Ministry of External Affairs, South Block, Central Secretariat, New Delhi on March 23, 1963 at 9.30 a.m. Shri Jawaharlal Nehru, Prime Minister will preside.

A meeting of the Governing Body will be held in the Conference Room of the Ministry of External Affairs, South Block, Central Secretariat, New Delhi on March 24, 1963 at 9.30 a.m. Shri Jawaharlal Nehru, Prime Minister, will preside. A meeting of the Society will be held soon after the meeting of the Governing Body.

A meeting of the Aeronautical Research Committee will be held in the Conference Room of CSIR Secretariat, New Delhi on March 12, 1963 at 10.30 a.m. Dr. D.S. Kothari, Chairman of the Committee, will preside.

A meeting of the Physical Research Committee will be held in the Conference Room of CSIR Secretariat, New Delhi on March 13, 1963 at 10.30 a.m. Dr. D.S. Kothari, Chairman of the Committee, will preside.

A meeting of the Chemical Research Committee will be held in the Conference Room of CSIR Secretariat, New Delhi on March 14 & 15, 1963 at 10.00 a.m. Dr. J.N. Mukherjee, Chairman of the Committee, will preside.

Dr. S. Husain Zaheer

Dr. S. Husain Zaheer, Director-General, Scientific & Industrial Research and *ex-officio* Secretary to the Union Ministry of Scientific Research & Cultural Affairs, returned to New Delhi on Feb. 25, 1963 after participating in the U.N. Conference on the Application of Science & Technology for the Benefit of Less Developed Areas, held at Geneva from Feb. 4-20, 1963.

On his way, Dr. Zaheer discussed with German industrialists at Frankfurt on the latest methods of pressure gasification of coal for production of gas. He also visited U.K. and discussed scientific problems of mutual interest with scientists and the Department of Scientific & Industrial Research. On behalf of CSIR, he signed an agreement with the Pergamon Press, U.K. according to which the latter will be in charge of the international distribution of CSIR publications.

PERSONAL

Appointments

SHRI P. CHENCHANNA—Senior Scientific Officer: Grade II, CMERI, Durgapur (Jan. 28, 1963).

SHRI P.K. JAIN—Senior Scientific Officer : Grade II, CBRI, Roorkee (Feb. 1, 1963)

SHRI P.S. NAIR,—Junior Technical Officer/Field Officer, National Register Unit, CSIR, New Delhi (Feb. 22, 1963).

Promotions

SARVASHRI M.S. ZOHA & V. VENKATARAMAN—Senior Scientific Officers: Grade II, CMERI, Durgapur (Jan. 28, 1963)

Symposia & Seminars

The holding of all the symposia and seminars sanctioned in 1962-63 (*CSIR News*, Vol. 12, Nos. 7 and 21) except those which have already been held and announced in *CSIR News*, has been postponed in view of the national emergency.

SHRI SRI KISHAN—Administrative Officer, CMERI, Durgapur (Feb. 5, 1963).

SARVASHRI J.M. DUTTA & B.V. SUBBARAYAPPA— Editors, Publications & Information Directorate, CSIR, New Delhi March (6, 1963).

SHRI S S. SAKSENA—Assistant Editor, Publications & Information Directorate, CSIR, New Delhi (March 4, 1963).

SHRI B R. GUHA—Junior Scientific Officer, CMERI, Durgapur (Feb. 5, 1963).

* * *

At the invitation of the Indian Aid Mission in Nepal, SHRI R.S. MEHTA, Director, CPHERI, Nagpur, visited Kathmandu during March 1-8,1963 to advice on Sundarijal Water Supply Scheme.

SHRI M. P. KUMARASWAMY, Senior Scientific Officer : Grade II, CMERI, Durgapur, returned from U. K. on Jan. 8, 1963 after completion of his training in metrology.

* * *

DR. A. LAHIRI, Director and SHRI A.N. BASU, Assistant Director, CFRI, Jealgora, have been nominated principal and alternate members of (i) Petroleum, Petroleum Products & Lubricants Sectional Committee and (ii) Petroleum Products Sectional Committee of the Indian Standards Institution.

DR. M.S. KRISHNAN, Director, NGRI, Hyderabad, has been nominated member of the Mining Education Committee of the Ministry of Scientific Research & Cultural Affairs.

MR. K.J. HUME, Unesco Adviser in CMERI, Durgapur, has been nominated member of Gauges Sub-Committee of the Indian Standards Institution.

DR. K.N. SINHA, Officer on Special Duty, CMRS, Dhanbad has been elected President of the National Association of Colliery Managers and Council Member of the Mining, Geological and Metallurgical Institute of India.

(Contd on p. 4, col. 1)

B R I E F S

Chemical Unit at Kandla

The Central Salt & Marine Chemicals Research Institute, Bhavnagar is setting up a plant at Kandla, in collaboration with a private firm, for the manufacture of potassium chloride and magnesium sulphate from mixed salt.

The plant, designed to produce two to three tons of potassium chloride and ten tons of magnesium sulphate per day, is expected to be commissioned in four months.

Ferro Alloy Industry

The Proceedings of the Symposium on *Ferro Alloy Industry in India* organised by the National Metallurgical Laboratory, Jamshedpur from Feb. 12-15, 1962 have been published.

The 244-page publication includes 30 papers covering diverse aspects of research work on ferro alloys, their production and properties, sampling and standardisation, potential industrial applications, utilisation of waste products and physico-chemical and thermo-dynamic principles of ferro alloy production.

CFTRI Report

The Annual Report for 1961-62 of the Central Food Technological Research Institute, Mysore has been published.

The 162-page report presents the research activities of the Institute under the following headings: Storage and preservation of perishables, infestation control and pesticides, biochemistry and nutrition, dietetics, food processing, fruit technology, arecanut technology, meat and fish technology, microbiology and sanitation, food engineering, packaging and information, statistics & extension services. Patents taken, research papers and other publications of the Institute are listed in the appendices.

NML Report

The Annual Report for 1961-62 of the National Metallurgical Laboratory, Jamshedpur has been published.

The 178-page report presents the work carried out by the laboratory on 77 main research projects, including nine projects in pilot plant stage. Progress made in operational research, such as the utilization of low-shaft furnace slag for the preparation of slag cement as well as light weight aggregates for insulating and structural concrete is also reported. Papers published, investigations completed and research reports prepared by the Laboratory are listed in the appendices.

Technical Manpower

The February 1963 issue of the Technical Manpower Bulletin published by the National Register Unit contains a note on Graduate Architects and reviews the number of institutions offering architecture at degree level, the annual out-turn of graduate architects during the last ten years and training or qualifications acquired abroad by Indian architects, and gives an analysis of the sectors of their employment.

Hourly Wind Speeds at Hyderabad

A note on the study of the hourly wind speeds at Hyderabad during 1958-60 from the point of view of wind power utilization has been published by the National Aeronautical Laboratory, Bangalore (Technical Note No. WP-13-62). On the basis of the study, the annual energy output is estimated at 1,250 KWH for a generator with an overall power coefficient of 12 per cent. The water pumping capacity of a WP-2 windmill is estimated at 3,7300 kilolitres a year.

Bulgarian Minister Visits CRRI

Mr. Gancho Ganev, Minister of Education and Culture, Government of the People's Republic of Bulgaria, visited CRRI, New Delhi on Feb. 25, 1963. Prof. S. R. Mehra, Director of the Institute, took him round the various research divisions of the Institute. The distinguished visitor showed keen interest in the research activities of the Institute.

Dr. Mendelssohn

Dr. K. Mendelssohn, F. R. S., Professor, Department of Physics (Clarendon Laboratory), Oxford University, visited the National Physical Laboratory, New Delhi on Feb. 28, 1963 and delivered a lecture on 'Onset of friction in liquid helium.' He also spoke on 'Heat Conduction' at the Delhi University on March 4, 1963. His visit has been sponsored by CSIR, under the Colombo Plan Technical Assistance Programme for delivering lectures in some of the research institutions and universities.

He will visit or deliver lectures at the Tata Institute of Fundamental Research, Bombay on March 12, National Chemical Laboratory, Poona on March 13, Regional Research Laboratory, Hyderabad and Osmania University on March 14, National Aeronautical Laboratory, Bangalore on March 15 and 16, Central Leather Research Institute, Madras and Madras University on March 17 and 18 and Saha Institute of Nuclear Physics, Calcutta and Calcutta University on March 20 and 21, 1963.

CMRS, Dhanbad—Prof. A. Roberts, Director, Postgraduate School of Mining, Sheffield University, in the Intrinsic Safety Testing Laboratory.

RESEARCH IN PROGRESS

National Laboratories

CFTRI, MYSORE

Processed Ready-to-use Cereal Products—A process has been developed for the preparation of ready-to-use cereal products. The cereal component is slurried with one-and-a-half to three times its weight of water and brought to a boil and the cooked slurry is dehydrated on steam-heated rollers in thin flakes.

Ready-to-use oats prepared by this method do not require any cooking prior to use with milk as porridge or with water as gruel. The processed product is light, fluffy, white and attractive in appearance.

Enriched products based on blends of groundnut flour, cereals, milk solids, tuber flours, minerals and vitamins have also been successfully processed into ready-to-use products by this technique, thus opening out possibilities for a variety of infant and weaning foods.

IIBEM, Calcutta

Live Oral Vaccine for Anticholera Immunization—A new approach to potentiation of existing cholera vaccine to be administered orally has been made. An El tor vibrio strain, harmless to man, has been isolated from surface water in Calcutta. This strain has been found to be of low pathogenicity and of full anti-genicity compared to *Vibrio cholerae* and *V. el tor* strains, the causative organisms for cholera infection. The water strain immunizes mice and gut of rabbits against infections with both the organisms.

Sponsored Research

Effect of Heat and Light on Lignocellulosic Substances—The susceptibilities towards heat and light of various lignocellulosic substances have been under study for elucidation of the mechanism of reaction. Lignocellulosic fibres (flax, sisal, mesta, white jute, tossa jute and coir) with proportions of lignin varying from 3.6—34.5 per cent in this order were subjected to heat (160°C.). The results obtained so far showed that coir with the highest lignin content suffered the maximum discolouration and flax with the lowest lignin content minimum discolouration, the colour change suffered by the other fibres being intermediate in the order of their lignin content. A loss in strength of 60-66 per cent and slight increase in water solubility and marked increase in alkali solubility have been observed in the case of jute.

With the exception of flax, all the fibres suffered progressive discolouration with the time of exposure to light, flax exhibiting a progressive improvement in colour. The strength of jute decreased by about 40 per cent as also its lignin content whereas its water and alkali solubilities increased—A.B. Sen Gupta & B. Majumdar, Indian Jute Mills Association Research Institute, Calcutta.

Comparative studies on formation of complexes of group VIA metals by physico-chemical methods—The complex formation of sodium salts of tungstic, molybdic, chromic and uranic acids with a typical hydroxyaliphatic acid like tartaric acid has been investigated potentiometrically. In every case a break has been observed corresponding to the molecular ratio 1 : 1 indicating the formation of the complex. The complexes have been isolated and their composition and properties studied. The results have been found to be in conformity with those obtained for sodium tungstic—tartaric acid system by viscosity and freezing point measurements. The lead and barium salts of the complexes have also been prepared and their compositions have confirmed their formulae—K.S.R. Krishniah & S. Prasad, Banaras Hindu University, Varanasi.

Production of alpha-ketoglutaric acid from molasses—Investigations have been undertaken on production of alpha-ketoglutaric acid starting from molasses and using a strain of *Arthrobacter* (Lab. No. S14). The results so far obtained indicate that when molasses (sugar content, about 50 per cent), after preliminary boiling at pH 4.0 for fifteen minutes to remove lime and other volatile impurities, is made into a 5 per cent medium with mineral salt solution, 0.05 per cent ammonium sulphate and 0.3 per cent yeast extract and is fermented, an yield of 20-25 per cent of alpha-ketoglutaric can be obtained.—Y.I. Shethna & J.N. Bhatt, Indian Institute of Science, Bangalore.

Kinetic Study of Oxidation of Aldehydes, Ketones and related Compounds by Persulphate—A study of the kinetics of oxidation by potassium persulphate of aliphatic ketones, aldehydes and isopropyl alcohol in aqueous solution catalysed by silver ion has been made. The following inferences have been drawn in respect of the ketones and aldehydes: (i) The reaction has a measurable rate, the reaction being rather erratic only in the case of formaldehyde; (ii) the order of the reaction is unimolecular with respect to the persulphate and almost of zero order with respect to ketones and aldehydes; the rate is linearly related to the concentration of silver except in the case of formaldehyde ; (iii) the reaction exhibits a negative salt effect of the primary exponential type except in the case of formaldehyde; (iv) in the case of ketones, the rate is almost independent of hydrogen ion concentration while sodium and potassium ions have specific inhibitory effect, the effect of potassium ions being greater than that of sodium ions, and the rate constant decreases while passing from acetone to higher members in the homologous series.

The study of oxidation of isopropyl alcohol has led to the following inferences: (i) the rate constant decreases with increase in potassium persulphate concentration, the decrease becoming very small at higher concentration; the rate constant decreases with time; (ii) the rate constant increases with increase in alcohol concentration and becomes constant after a certain alcohol concentration; (iii) the salt effect is negative and of the primary exponential type.

The spot test for the detection of the different oxidation products showed that in the case of ketones, carboxylic acids with lesser number of carbon atoms are formed while in

the case of aldehydes carboxylic acids with the same number of carbon atoms are formed.

All the reactions have energy of activation of the same order ranging from 11.86 to 14.51 Kcals. $mole^{-1}$. Further, the entropy of activation for each reaction is negative and ranges from −29.9 E.U. to −38.73 E. U. Taking these facts into account, the most plausible mechanism of reaction has been postulated—K.C. Khulbe, Chemistry Department, Th. D. S. B. Govt. College, Naini Tal.

PERSONAL

(*Contd from p. 1, col. 3*)

DR. B. SINGH, Assistant Director, CMRS, Dhanbad, has been elected Secretary of the National Association of Colliery Managers.

DR. D.S. BHATIA, Assistant Director, CFTRI, Mysore, has been re-appointed Convener of the Groundnut Cake Flour Sub-committee of the Indian Standards Institution. He has also been appointed member of the following re-constituted panels of the Development Council for Food Processing Industries: (i) Confectionary, Glucose & Chocolate, (ii) Cereal Products, (iii) Fruit Products and (iv) Research & Productivity.

DR. G. T. GADRE, Senior Scientific Officer, CSMCRI, Bhavnagar, has been elected Fellow of the Institution of Chemists (India)

DR. N. L. LAHIRY, Assistant Director, CFTRI, Mysore, has been renominated member of the reconstituted Poultry Committee, ICAR.

DR. S. M. K. CHETTY, Senior Scientific Officer, CBRI, Roorkee, has been admitted as an Associate Member of the International Association for Shell Structures.

SHRI RABI PROSAD DAS, Junior Scientific Officer, CDRI, Lucknow has been awarded D. Phil. degree by the Calcutta University for his thesis : *Studies on physiology of reproduction—The effect of cadmium chloride on reproduction and fertility in rats.*

SHRI D. S. PRADHAN, CFTRI, Mysore has been awarded Ph. D. degree (Tech.) in food technology by the University of Bombay for his thesis : *Studies on nucleotide metabolism and protein biosynthesis.*

PATENTS

Patents Filed

86382 : *An improved process of coal flotation by use of grid*—A.R. Roy, B.B. Konar, G.G. Sarkar & A. Lahiri, CFRI, Jealgora.

86383 : *Process of treating mixed salt for potash alum*—K. Seshadri, G.D. Bhat & J. R. Sanghvi, CSMCRI, Bhavnagar.

U. K.

2181/1963 : *A process for the manufacture of high alpha cellulose dissolving grade pulps by alkaline pulping method*—G.M. Vyas, D.S. Bendal & M.B. Mahajan, NCL, Poona.

Patents Accepted

76997—*Improvements in or relating to the production of copper powder by electrolytic process*—S.R. Ranganathan, NML, Jamshedpur.

77225 : *A process for the preparation of beta ionone from pseudoionone*—B. N. Joshi, K. K. Chakravarti, S.C. Bhattacharyya & R.C. Shah, NCL, Poona.

77451 : *Improvements in or relating to the production of terpineol*—Bharat Bhushan, N.K. Sogani & S. H. Zaheer, RRL, Hyderabad.

77452 : *Improvements in or relating to the production of terpin hydrate*—Bharat Bhushan, N. K. Sogani & S. H. Zaheer, RRL, Hyderabad.

Patent Sealed

74451 : *Preparation of covering materials from anacardic materials*—D. Raghunath, N.P. Suryanarayana & N. R. Krishnaswamy, NCL, Poona.

Research Papers

A.K. SHARMA & A. K. CHATTERJI—(CSIR Scheme, University College of Science, Calcutta)—Chromosome size as a factor in radio-sensitivity. *Nucleus*, **5** (1) (1962), 67-74.

M. SRINIVASAN, P. N. ACHYUTMURTHY, & V. SUBRAHMANYAN, (CFTRI, Mysore)—$Ca(OH)_2$ in sucrose solution as a reagent for the preparation of water-dispersible calcium proteinates. *Nature, Lond.*, **196** (1962), 1313.

P. M. PILLAI, & N. S. Wariyar, (CSIR scheme, University College, Trivandrum)—A note on the chemical examination of the tubers of *Kaempferia rotunda* Linn. *Curr. Sci.* **31** (1962), 480.

L.D. KAPOOR & B.K. KAUL,(RRL, Jammu & Kashmir)—Effect of gibberellic acid on *Chenopodium ambrosioides* var. *anthelminticum*. *J. Pharm. Sci.*, **51** (1962), 1113-14.

FORM IV

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CSIR NEWS

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GOVERNING BODY DECISIONS

The Board of Scientific & Industrial Research and the Governing Body, CSIR met in New Delhi on March 23 and 24, 1963 respectively. Prime Minister, Shri Jawaharlal Nehru presided.

High-Altitude Research

The Governing Body approved a proposal to constitute a committee to serve as the focal point of thought on scientific problems at high altitudes and in the Himalayan region. The committee will be headed by Dr S. Husain Zaheer, Director-General, Scientific & Industrial Research and will consist of the Scientific Adviser to the Minister of Defence or his nominee; Dr D.N. Wadia, National Professor of Geology and Geological Adviser to the Government of India; Director-General, India Meteorological Department or his nominee; Director-General, Survey of India or his nominee; Director-General, Geological Survey of India or his nominee; Director, Botanical Survey of India or his nominee; Director, Zoological Survey of India or his nominee; Director-General, Armed Forces Medical Services; Director, Indian Council of Medical Research; Engineer-in-Chief, Army Headquarters; Director, Border Roads Organization; Chairman, Central Water & Power Commission or his nominee; Director, Himalayan Mountaineering Institute; and a representative each from the Atomic Energy Commission and the Universities as members.

Design & Engineering Unit

Approval was given to the establishment of a Design & Engineering Unit for providing assistance to the national laboratories in the translation of laboratory results to industrial practice. The functions of the unit will include the evaluation of the processes developed in the national laboratories from the commercial point of view, designing of pilot and industrial plants based

(*Contd on p. 4, col. 3*)

PRIME MINISTER PRESENTS BHATNAGAR AWARD

The Prime Minister, Shri Jawaharlal Nehru, presented the Shanti Swarup Bhatnagar Memorial Award to Prof. K. Chandrasekharan of the Tata Institute of Fundamental Research and Prof. C. Radhakrishna Rao of the Indian Statistical Institute, at a function held at the National Physical Laboratory, New Delhi on March 23, 1963.

Dr S. Husain Zaheer, Director-General, Scientific & Industrial Research in his introductory speech gave a short account of the genesis of the award.

Prof. Humayun Kabir, Union Minister for Scientific Research & Cultural Affairs, in his address, said that it was mainly the interest of the scientist in his subject that led to the growth and development of science. The example of the award winners, he hoped, would inspire other young scientists.

Shri A. J. Kidwai, Secretary, CSIR, reading the citations referred to Prof. Chandrasekharan's notable research contributions in the field of mathematical analysis, particularly the theories of functional equations of zeta-functions, including three advanced treatises in mathematics which are characterized by a combination of the analytical and the arithmetical methods of approach and belong to the classical tradition of analytical theory of numbers.

The citation in respect of Prof. Radhakrishna Rao, referred to his work in statistical methodology and probability and his international reputation for his contributions to statistical theory and biometric methods and as the principal author of several major statistical theorems

(*Contd on p. 2, col. 3*)

Prof. K. Chandrasekharan (left) & Prof. C. Radhakrishna Rao, recipients of Bhatnagar Award for 1959

BRIEFS

Foundation Stone of New Divisions of CFTRI Laid

Prof. Humayun Kabir, Union Minister of Scientific Research & Cultural Affairs and Vice-President, CSIR, laid the foundation stone of the Divisions of Meat & Fish Technology and Infestation Control & Pesticides, Central Food Technological Research Institute, Mysore, on March 11, 1963. Dr S. Husain Zaheer, Director-General, Scientific & Industrial Research who was present on the occasion also addressed the gathering.

Governing Body Members

Shri Manubhai Shah, Minister of International Trade, Government of India and Dr M.S. Randhawa, Adviser, Natural Resources, Planning Commission, have been elected to the Governing Body of CSIR as representatives of the Board of Scientific & Industrial Research.

New Studies Undertaken by CSIR

The Council of Scientific & Industrial Research is assisting the Planning Commission in the collection of data on scientific research to serve as a basis for scientific research policies.

Studies on current trends in scientific and technological research in India have been initiated by the Council on behalf of UNESCO and at the instance of the Ministry of Scientific Research & Cultural Affairs.

Shri A. Rahman, Assistant Director, History of Science Unit, Publications Directorate, New Delhi has been entrusted with these two assignments.

New Exhibits at BITM

Three attractive scale models of a W.G. Locomotive, an air-conditioned vestibule coach and a Schliern-type coach built at the Integral Coach Factory, Perambur were presented to the Birla Industrial and Technological Museum, Calcutta, by the Ministry of Railways. The exhibits, valued at about Rs. 68,000, were handed over to the Museum by Shri M.A. Ashruff, Senior Deputy General Manager, Eastern Railway, at a ceremony held at the Museum premises on Feb. 15, 1963.

Durofume process for Defence Installations

The Defence Services have approved the introduction of Durofume Process as a routine measure for disinfestation of food stuffs in their installations.

The process, developed at the Central Food Technological Research Institute, Mysore, is highly effective in controlling infestation of grains, oilseeds, pulses, spices, coffee and milled articles and ensures long storage by single application. The process is quite safe and cheap. It has been applied successfully by the Institute, Coffee Board and by some state governments and commercial firms. The Institute provides facilities for training personnel for the use of Durofume Process.

Foreign Scientists Visit CECRI

Prof. I. Epelboin, an eminent electrochemist of Laboratoire de Physique, Paris visited CECRI, Karaikudi on Feb. 25 & 26 1963 and delivered a lecture on 'Impedance of the mercury drop electrode'. He also distributed certificates to the Defence Personnel who attended the special training course on electroplating.

Prof. W. F. K. Wynne-Jones, Professor of Chemistry, King's College, Durham University, New Castle-upon-Tyne, visited the Institute on March 2, 1963 and delivered a lecture on, 'Electrolytic oxidation and reduction of organic compounds'.

Metric System in Textile Industry

A four-week training course on the introduction of metric system in textile industry organized by the South India Textile Research Association (SITRA) was inaugurated at Coimbatore by Shri Doraiswamy, Textile Commissioner to the Government of India, on Feb. 19, 1963. Three hundred and fifty technicians from the member mills of SITRA are expected to be benefitted by the course.

Research Papers

U.H. Narayanan & K.R. Venkatachalam (CECRI, Karaikudi)—A time-delay circuit for polarography. *J. electroanal. Chem.*, **5** (1963), 158-161.

R. Viswanathan, T.R. Venkatasubramanian, S. Sampath & H.V.K. Udupa (CECRI, Karaikudi)—Electrodeposition of copper powder. *Indian chem. Engr*, **4** (1962), 194-197.

H.V. Mirchandani (CBRI, Roorkee)—Economics of maintenance costs in building industry. *Indian Builder*, **10** (12) (1962), 160.

S. Kumar & B.B. Nag (CGCRI, Calcutta)—Effects of fluxing ingredients on the properties of magnesium-calcium-alumino silicate glasses, *Trans. Indian ceram, Soc.* **21** (1962) 107-114.

A.K. De & S.K. Majumdar (CSIR Scheme, Jadavpur University, Calcutta)—Extraction and spectrophotometric determination of cobalt (II) with thenoyl trifluoroacetone. *Anal. chim. Acta*, **27** (1962), 153-157.

A.K. De & M.S. Rahman (CSIR Scheme, Jadavpur University, Calcutta)—Extraction and spectrophotometric determination of nickel with thenoyl trifluoroacetone. *Anal. chim. Acta*, **27** (1962), 591-594.

A.K. De & S.K. Majumdar (CSIR Scheme, Jadavpur University, Calcutta)—Cation exchange behaviour of vanadium V. *Z. anal. Chem*, **191** (1962), 40-45.

BHATNAGAR AWARD

(*Contd from p. 1, col. 3*)

which are incorporated in modern books on statistics.

Prof. Chandrasekharan and Prof. Rao, while thanking the Council for the award, dealt in their dissertations with their specific contributions in mathematics and statistics respectively. Prof. Rao also announced his donation of the entire prize money to the National Defence Fund.

In a brief speech on the occasion, Shri Nehru underlined the role of science in building modern India. He congratulated the award winners and expressed the hope that the recognition would inspire them to greater achievements.

RESEARCH IN PROGRESS

National Laboratories

CDRI, LUCKNOW

Pancreatin from Buffalo Pancreas—An improved method has been developed to obtain pancreatin (a substance containing enzymes) in high yields utilizing buffalo pancreas as the source. The product which possesses high enzymatic activity as assayed by standard BP methods, compares favourably with imported brands.

CRRI, NEW DELHI

Pussolona Studies—As an essential step towards manufacture of reactive surkhi, a survey of suitable clay deposits occurring in different regions of the country has been in progress. So far the survey has been completed in the States of Uttar Pradesh, West Bengal, Assam, Bihar, Orissa, Maharashtra, Gujarat, Rajasthan, Madras, Kerala and part of Madhya Pradesh. More than 60 deposits of suitable quality have been located.

Using two types of kilns of 15 tons a day capacity, viz. rotary kiln (electrically operated and suited to urban areas) and down-draft kiln (coal-fired type which can be easily operated in rural areas), experiments have been carried out on controlled calcination of clay. The experiments have shown that reactive surkhi can be produced from both the kilns after fine grinding. The surkhi thus manufactured has been supplied to some building and road construction works for use as cement-saving material.

Standardized reactive surkhi, using lime and sand, has also been produced. Tests with this product have shown that it attains the same strength as normal cement mortar within 7 days and that it can completely replace cement mortar in building construction. Masonry blocks using such a mortar have also been made and found to be as good as those using normal cement mortar. Suitable compositions of lime surkhi mortar which can give a good surface without shrinkage cracks have also been developed. These mortars have the added advantage of lower setting than cement mortar (which is a great advantage to the mason) and better cohesiveness bond, trowel ability and water retentivity.

The investigations have proved that it is possible to use lime reactive surkhi mortars in most residential building construction, thus saving considerable quantities of cement besides effecting saving in cost.

Sponsored Research

Study of Jute Fibre Degradation by Fungus—The initiation of micro biological growth and its progress on jute fibre have been studied using new isolates of fungi and organism maintained in stock culture. The effects of various factors bearing on growth and degradation, namely, changes in external conditions and modifications of the fibre, have also been examined.

A special technique has been developed for detecting fungal growth on the surface and inside the jute fibre as the simple staining or staining combined with swelling used for detecting fungal hyphae and bacteria on cotton have been found unsatisfactory for jute. The technique consists in applying Chlorazol Sky Blue to the ultimates of the fibre when the hyphae appear blue against the unstained cells of the fibre.

The following inferences have been drawn from the study: (i) All the members of the Dematiaceae family penetrate the lumen; (ii) growth inside the lumen is not a universal feature of fungal attack; (iii) minimum period for lumen invasion is different for different species; (iv) high degree of uniformity exists between extent of lumen growth and degree of fibre decomposition; (v) jute fibre is attacked more quickly than cotton, although other more quantitative criteria show jute to be more resistant; (vi) lumen penetration is largely a property of the species of fungi and is not affected by external conditions, with the exception of normally non-penetrating but strongly jute decomposing species, *Aspergillus terreus*; (vii) fungi growing within the lumen penetrate the fibre cell wall apparently at random, not at weak points nor through open ends; and (viii) the active organisms which attack the fibre under different practical condi-

CRRI, New Delhi—Rotary kiln for manufacture of reactive surkhi, fabricated at the Institute

tions of damage are different—Rekha Ghose & S N. Basu, Indian Jute Mills Association Research Institute, Calcutta.

PERSONAL

Appointments

SHRI HIRONMOY LAHIRI—Senior Scientific Officer : Grade I, CMRS, Dhanbad (March 1, 1963).

SHRI M. F. QURAISHI.—Accounts Officer, CMRS, Dhanbad (March 1, 1963).

Promotions

SHRI R.C. BISWAS, Administrative Officer : Grade I, RRL, Hyderabad—Administrative Officer (Selection Grade), RRL, Hyderabad (Jan. 23, 1962).

SHRI N.C. CHAKRABORTY—Junior Technical Officer, CGCRI, Calcutta (Feb. 18, 1963).

SHRI A. H. SIDDIQUI, Assistant, RRL, Hyderabad—Officiating Section Officer, RRL, Hyderabad (Jan. 19, 1962).

SHRI S. RANGA RAJA RAO—Senior Technical Officer : Grade I, CMRS, Dhanbad (March 15, 1963).

* * *

SHRI R. K. MITTAL relinquished charge of the post of Under Secretary, CSIR Secretariat, on the afternoon of the March 5, 1963, consequent on his retirement from the Council.

DR W. M. VAIDYA, Deputy Director-in-charge, NPL, New Delhi, has been nominated member of the General Council, Indian Standards Institution.

DR M. G. KRISHNA, Deputy Director-in-charge and Dr J. S. Ahluwalia, Assistant Director, IIP, Dehra Dun have been nominated principal and alternate members of the Chemical Engineering Sectional Committee, ISI.

DR J. L. BOSE, Senior Scientific Officer : Grade I, NCL, Poona, has been nominated member of the Technological Research Sub-Committee of the Indian Central Cotton Committee.

DR K.S. RAJAGOPALAN, Senior Scientific Officer : Grade I, CECRI, Karaikudi rejoined duty on his return from U.K. where he had undergone advanced training for about 18 months in electrochemical kinetics and corrosion under the Colombo Plan. He was attached to the Department of Chemistry, King's College, Newcastle-upon-Tyne from October 1961 to July 1962 and to the Corrosion Group, National Chemical Laboratory, Teddington from July 1962 to February 1963.

* * *

DR S. MUKHERJEE, Senior Scientific Officer: Grade I, IIBEM, Calcutta, has been invited by the World Health Organization to serve as a member of the WHO Expert Advisory Panel on Cholera for a period of five years.

SHRI A.V. DEO, Junior Scientific Officer, NCL, Poona has been awarded Ph. D. degree by the University of Poona for his thesis : *Physical properties of monomolecular films on water surface.*

Dr G.S. Sidhu

DR G.S. SIDHU, Assistant Director, Regional Research Laboratory, Hyderabad, has been promoted as Deputy Director-in-charge (w.e.f. Jan. 27, 1963).

Born on July 4, 1920 in Patiala, Dr Sidhu had his school and college education at Lucknow. He served as the Senior Staff Instructor at the Civil Defence Staff School, Lucknow from 1941 to 1944 and as Lecturer in Chemistry from 1944 to 1949. In 1949, he obtained his Ph.D. degree in Organic Chemistry. He joined the Central Laboratories for Scientific & Industrial Research, Hyderabad (taken over by CSIR in 1956 as Regional Research Laboratory, Hyderabad) as Scientific Officer in 1955. He worked as a Research Associate at the Institute for the Chemistry of Woods and Polysaccharides, University of Heidelberg in 1956 and in 1959-60 and at the Pregl Laboratory of the Medicinal Chemistry Institute, University of Graz, Austria in 1956.

He has carried out investigations in synthetic drugs, chemistry of wood extractives and lignin, stereochemistry of lignans, chemistry of essential oils, technology of cellulose and of organic intermediates for drugs, pharmaceuticals and synthetic perfumes. Dr Sidhu has published over 40 research papers and has taken 16 patents.

PATENTS FILED

86541: A reactor for carrying out highly exothermic and explosive reactions particularly suited for chlorination of methane—S.P. Mukherjee, A.D. Deshpande, C.V. Potnis & M.U. Pai, NCL, Poona.

86638: A process for the preparation and synthesis of 2-isopropenyl hexanols—S. Ramaswami, S.K. Ramaswamy & S.C. Bhattacharyya, NCL, Poona.

86639: An inexpensive chemical method of dicing a semiconductor slice for the manufacture of transistor family devices—K.S. Balain, CECRI, Pilani.

GOVERNING BODY DECISION

(*Contd from p. 1, col. 1*)

on these processes and preparation of project reports including engineering designs for implementation of the projects.

The unit which will act as "consulting engineers" to the Director-General, Scientific & Industrial Research and the national laboratories will, in the initial stages, lay emphasis on the mechanical and chemical engineering design problems. The working out of the details of the unit has been entrusted to the Director-General, Scientific & Industrial Research. The existing design and engineering facilities available in the national laboratories will also be strengthened.

Substitute Materials

The Governing Body also accepted a proposal to undertake study to find indigenous materials for substituting copper, tin, zinc and such other metals for which India is depending mainly on imports.

In view of the rapid expansion of the aluminium industry in India, the extended application of aluminium and aluminium alloys in place of imported metals and alloys would be given important consideration. A committee consisting of Dr B.R. Nijhawan, Dr B.D. Kalelkar, Dr K.N.P. Rao and Dr R.V. Thamahnkar will make a study of the subject.

The Governing Body noted with satisfaction that the national laboratories have been geared to Defence requirements and are working in close collaboration with Defence establishments.

The meeting placed on record its deep sense of loss at the death of Lala Shri Ram who was associated with the Board and Governing Body of CSIR from the very inception.

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R.N. 4212/5

CSIR NEWS

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SCIENCE & TECHNOLOGY FOR LESS DEVELOPED AREAS

Dr. S. Husain Zaheer, Director General, Scientific & Industrial Research, addressed a meeting of the Association of Scientific Workers of India at the National Institute of Sciences of India, New Delhi, on April 3, 1963 on his impressions about the United Nations Conference on the Application of Science and Technology for the Benefit of Less Developed Areas held at Geneva during February 4 to 20, 1963.

Dr. Zaheer referred to the Conference as unique in the history of mankind since it was the biggest gathering of scientists and technologists. He remarked, however, that adequate preparatory work had not been done by the organizers to assist less developed countries in the collection of data required to arrive at definite conclusions and that the number of Indian delegates to the Conference was too small compared with that sent by other countries. Consequently, he was of the opinion that the Indian delegation could not make available its experience in scientific planning to developing nations which were keen to get such an information. Even so, he added, that India played an important role in formulating the main recommendation to the United Nations that it should set up suitable machinery for a more detailed study of the problem of application of science and technology for the development of emerging nations.

Dr. Zaheer estimated that resources of the order of 40 to 50 billion dollars a year besides a large army of technical personnel would be needed for bringing about this task and opined that this money could be found only if the world powers who spend 150 billion dollars a year on armament could come to an agreement on disarmament. In the concluding portion of his speech, he referred to the hopeful note of Mr. Paul Hoffman, representative of the U. N. Secretary-General, that a sum of Rs. 200 million dollars would be available for the task outlined by the Conference.

Dr. V.K.R.V. Rao, Director, Institute of Economic Growth, another member of the Indian delegation, also addressed the meeting and suggested that a joint conference of scientists, planners, economists and sociologists should be convened in India to look at this problem objectively and suggest suitable solutions.

MEETINGS

A meeting of the Executive Council of the Central Mining Research Station, Dhanbad, will be held at the Station on April 25, 1963.

A meeting of the Executive Council of the National Physical Laboratory, New Delhi, will be held at the Laboratory on April 29, 1963 at 10 a.m. Shri A. Ramaswamy Mudaliar, Chairman of the Council, will preside.

History of Science

A History of Science Unit has been set up by the Council of Scientific & Industrial Research for undertaking research in the history and philosophy of science and technology in India and their impact on the social development of the country in different periods of history.

An advisory committee of the Unit, has been constituted with Dr. D.S. Kothari as Chairman, Dr. S. Husain Zaheer, Director-General, Scientific & Industrial Research, Shri A.J. Kidwai, Secretary, Council of Scientific & Industrial Research, Prof. R.C. Majumdar, Professor of Physics, Delhi University, Dr. S.N. Hasan, Professor of History, Aligarh Muslim University, Dr. B.R. Seshachar, Professor of Zoology, Delhi University, Hakim Abdul Hamid, Shri Shiv Sharma, Hon. Ayurvedic Physician to the President of India, Dr. K.P. Tripathi, Chairman, Nagari Pracharani Sabha, Varanasi, and Shri S.N. Sen, Registrar, Indian Association for the Cultivation of Science, Calcutta, as members and Shri A. Rahman as Secretary.

The Committee met in New Delhi on March 26, 1963 and approved the programme of research of the Unit to be divided into the following periods: Prehistoric, ancient, medieval, and nineteenth century and after. The Unit will concentrate on scientific development in the medieval and modern periods as research in ancient period is being carried out by the National Institute of Sciences of India.

To start with, the Unit will undertake the compilation of bibliography of source-material including historical chronicles.

In addition, efforts will be made by the Unit to create greater appreciation of history of science in the country by the Unit acting as a centre to feed the universities by organising special courses, arranging lectures, working out syllabii for different levels of education and writing books for special use in schools and colleges.

Prof Kabir inaugurates New Gallery at BITM

Prof. Humayun Kabir, Union Minister for Scientific Research & Cultural Affairs and Vice-President, CSIR, inaugurated the communication gallery and a postal exhibition in the Birla Industrial & Technological Museum, Calcutta, on March 16, 1963.

The gallery traces the evolution of telephone, telegraph and postal systems by means of interesting models and exhibits.

Among the 31 participants in the postal exhibition were the Philatelic Bureau of the Indian Posts & Telegraph Department. The Bureau has opened a philatelic counter and a temporary post office in the Museum.

B R I E F S

Indian Ocean Expedition

The first cruise of the U.S. owned vessel, the 1,700-ton "Antom Brun", which will study the distribution of marine life in the Indian Ocean and help the countries in the region to solve their food problem, was inaugurated in Bombay on March 7, 1963 by Shrimati Vijayalakshmi Pandit, Governor of Maharashtra.

Dr. N.K. Panikkar, Director, Indian Programme, International Indian Ocean Expedition, while requesting Shrimati Pandit to inaugurate the cruise, outlined the scope of Indian participation in the expedition and the programme of the cruise.

Mr. Milton C. Rewinkel, the American Counsul-General, welcoming the Governor, said that the results of the research would produce far reaching benefits to mankind.

Inaugurating the cruise, Shrimati Pandit said that exploration of new areas in the sea for food would be of immense value to this country. She said it was gratifying that 25 nations were participating in this major scientific venture.

Four Indian scientists have been deputed to participate in the first cruise of the ship.

IGY Symposium

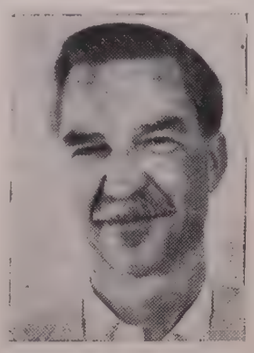
The first volume of the proceedings of the Symposium on the International Geophysical Year, held at the National Physical Laboratory, New Delhi during Feb. 13-16, 1961 under the joint auspices of the Indian National Committee for IGY and Physical and Radio Research Committees of CSIR, has been published.

The 256-page publication describes some of the early results of Indian IGY activities in the 23 papers and 16 abstracts of papers presented and discussed at the symposium covering the following aspects: Ionospheric morphology and true height profiles; ionospheric drift; ionospheric absorption; solar terrestrial relationships; and ionospheric irregularities.

U.N. Expert for NAL

Mr. Jamer R. Cole of the Royal Aircraft Establishment, Farnborough, U.K., deputed by the International Civil Aviation Organisation under the U.N. Special Fund Programme, joined the National Aeronautical Laboratory, Bangalore on March 8, 1963.

Born in London in 1911, Mr. Cole was an apprentice in RAF



during 1928—1930. He served the RAF Tech. (E) Branch till 1945, retiring from there as a Flying Officer and since then he has been working with the Royal Aircraft Establishment in its Aerodynamics Department (Wind Tunnels). He underwent an advanced course at the College of Electronics, Malvern, U.K. and is a specialist in wind tunnel instrumentation

Mr. Cole was elected Associate Fellow, Royal Aeronautical Society, in 1937.

Polish Minister Visits CMRS & CFRI

Mr. J. Mitrega, Minister for Mining & fuel, Poland, and party visited the Central Mining Research Station, Dhanbad and Central Fuel Research Institute, Jealgora, on March 27, 1963. The Polish Minister discussed with Dr. K.N. Sinha, Officer on Special Duty, CMRS, Dhanbad, the problems of mine ventillation, mine fire, methods of mine working and sand stowing. At the CFRI, Jealgora, Mr. Mitrega showed keen interest in regard to the low temperature carbonization pilot plant at work and hinted at the possibility of Indo-Polish collaboration in the development of low temperature carbonization industry. He also acquainted himself with the problems of utilization of coal facing the country. The successful preparation of coke from non-coking Talcher (Orissa) coals for use in low shaft blast-furnace received special appreciation.

CFRI, JEALGORA—Mr. J. Mitrega (extreme right) examines coke from Talcher coal.

RESEARCH IN PROGRESS

National Laboratories

CFTRI, MYSORE

Ready-to-eat High Calorie Pre-cooked Foods—As drum-dried preparations of precooked foods like rice, wheat semolina, pulses and dhal and calcium-treated fresh water fish and mutton possess good storage qualities, compactness and uniformity of calories per given weight, preparation of pre-cooked composite foods both of the sweet and savoury types based on rice or wheat and various pulses was attempted. The constituents were precooked, mixed in proper proportions, drum-dried and mixed with necessary flavouring agents like asafoetida, saffron or vanilla. It was possible to adjust the composition of the drum-dried product to correspond to about 5 calories per gram and to have an average protein content of 10 per cent and fat up to 20 per cent. In the sweet preparation, adequate amounts of essential vitamins were also incorporated. The product was flaky, fluffy and fairly dry. Briquettes of 25 grams each, convenient for eating, were also made by compressing the composite product. The briquettes withstood accelerated conditions of storage (37° and 50°C.) for more than 12 weeks. The consumer acceptability of the briquettes was also favourable. These priliminary studies have indicated the possibility that both vegetarian and non-vegetarian foods in a readily available compact and energy-rich form can be made for special uses such as in picnics, long distance travel and as emergency ration.

NML, JAMSHEDPUR

Rajhara Iron Ore Beneficiation—Pilot plant studies of beneficiation and sintering of a representative run-of-mine iron ore sample from Rajhara mines of Bhilai Steel Plant were undertaken. The beneficiation was carried out in two stages. In the first stage, the ore was subjected to crushing, scrubbing (with water) and screening. In the next stage washed ore was subjected to heavy media separation and jigging. Washing of the ore removed its stickiness and enabled its easy handling for use in blast furnace and gave an enriched size ore burden suitable for iron smelting. Heavy media separation and jigging of the washed ore further improved its grade in respect of silica and alumina contents. The washed ore fines obtained in the first stage were sintered using non-fluxing and self-fluxing sinters. The results indicated that suitable sinter for use in blast furnace could be produced. Heavy media separation and jigging of the washed ore fines gave an improved grade of fines which could also be used for sintering. Evaluation of the overall economics of beneficiation and sintering indicated that the cost of production of pig iron in the blast furnace could be reduced.

Sponsored Research

Studies on Sweep Distillation—The principle of mass diffusion employed to separation of azeotropic mixtures, called sweep distillation, has been applied for the separation of components of azeotropic mixtures of alcohol+water and pyridine+water. Using a set-up consisting of an air drying and preheating section, vapour generating section and diffusion column containing phosphor bronze wire mesh as diffusion barrier, data have been obtained and correlated to give a relationship between the extent of separation and other operating variables, such as pressure of operation, diffusion-barrier area and pressure difference across the diffusion barrier—K. Venugopal & N. R. Kuloor, Indian Institute of Science, Bangalore.

Concentration of Rectified Spirit—As the consumption of steam in azeotropic distillation—the conventional method of producing absolute alcohol from rectified spirit—is high, experiments were undertaken to enrich rectified spirit to 99.0 per cent using solid desiccants such as calcium sulphate, calcined aluminium sulphate, magnesium sulphate, sodium sulphate, γ-alumina, silica gel, sodium and potassium acetates and ion exchange resin (IR-120). As anhydrous calcium sulphate gave satisfactory results, further experiments have been carried out using anhydrous calcium sulphate both in the fixed and fluidized beds. The following inferences have been drawn from the experiment : (i) As the temperature increases, the per cent enrichment falls down ; this is also the case in respect of contact time ; (ii) the maximum enrichment of 6 per cent is obtainable at a bed height of 12.5 cm. ; (iii) fixed bed gives better enrichment than a fluid bed ; (iv) the enrichment is constant for a particular period of time and then suddenly falls down; this time of transition from steady state to unsteady state, designated as 'break time', is very high and the break time value decreases with increasing temperature.

As diffusion is the controlling mechanism in the transfer of water molecules to the pores of the desiccant, equations have been developed for the steady state adsorption taking into account three resistances in series in the transfer of water molecules from the gas stream to the adsorbing surface inside calcium sulphate. The variation of mass transfer factor 'j' with modified Reynolds Number has been studied and it has been found that 'j' remains almost constant as the modified Reynolds Number increases—B. Venugopal & N. R. Kuloor, Indian Institute of Science, Bangalore.

Research Papers

P. NILAKANTAN & B.N. NARAHARI ACHAR (NAL, Bangalore)—An iterative method for obtaining statistical frequency distributions. *Nature, Lond*, **196** (1962), 1227.

R. VIJAYAVALLI, P.V. VASUDEVA RAO, S. SAMPATH & H.V.K. UDUPA (CECRI, Karaikudi)—Function of a.c. superimposed on d.c. in the anodic oxidation of lead in sulphuric acid. *J. Electrochem. Soc.*, **110** (1) (1963), 1-4.

B.A. SHENOI & (Mrs.) K. VIJAYALAKSHMI (CECRI, Karaikudi)—Chromium plating on aluminium and its alloys. *Curr. Engng Pract.*, **5** (8) (1962), 6-8.

S.K. RANGARAJAN & K.S.G. DOSS (CECRI, Karaikudi)—Faradic admittance, a diffusion model II. *J. electroanal. Chem.*, **5** (1962), 114-123.

PERSONAL

Appointments

SHRI R.N. BAIJAL—Senior Scientific Officer: Grade II, CMRS, Dhanbad (March 22, 1963).

Promotions

SHRI P.C. MAHENDRU—Senior Scientific Officer: Grade II, NPL, New Delhi (March 27, 1963).

SHRI V. KRISHNAMURTHY—Junior Scientific Officer, CMRS, Dhanbad (Feb. 27, 1963).

SHRI B.D. BANERJEE—Junior Scientific Officer, CMRS, Dhanbad (Feb. 27, 1963).

SHRI P.K. GUPTA—Junior Scientific Officer, NPL, New Delhi (March 27, 1963).

SHRI N.R. ADYANTHAYA— Junior Scientific Officer, IOE, New Delhi (March 27, 1963).

* * *

Consequent on his transfer from CFRI, Jealgora, SHRI A. GHOSHAL, Statistical Officer, joined duty at CSIR, New Delhi on March 12, 1963.

The President, CSIR has been pleased to permit DR. B. MUKERJI, Director, CDRI, Lucknow, to retire from the service of CSIR with effect from March 31, 1963 (afternoon). Dr. M.L. Dhar, Deputy Director of the Institute will perform the duties of the Director till a regular incumbent is appointed as Director.

* * *

SHRI JAGDISH PRASAD, Junior Scientific Officer, CGCRI, Calcutta, returned from France on March 4, 1963 after completion of his training in the field of applied optics under the Indo-French Technical Coordination Programme.

DR B.R. NIJHAWAN, Director, NML, Jamshedpur, has been elected Vice-President, Mining, Geological & Metallurgical Institute of India.

SHRI B.S. KESAVAN, Director, INSDOC, New Delhi, has been nominated member of the reconstituted Council of the National library, Calcutta.

SHRI P.I.A. NARAYANAN, Officer-in-Charge, Ore Dressing, NML, Jamshedpur, has been nominated chairman of the committee constituted by Travancore Minerals Ltd., Quilon, Kerala to examine the feasibility of economic exploitation of the mineral at Manavalakurichi and to make recommendations for rationalisation and modernisation of their plant.

SHRI P. P. BHATNAGAR, Asst. Director, NML, Jamshedpur has been nominated member of the panel constituted by the Indian Standards Institution to prepare preliminary drafts for ferro-zirconium, ferro-columbium, ferro-boron, misch metal and chrome manganese.

SHRI J.K. SINHA, Junior, Scientific Assistant, CMRS, Dhanbad, has been elected member of the Registry of Medical Technologists, International, Missouri, U.S.A.

SHRI MOHD ABDUL QUADER, Junior Scientific Officer, NML, Jamshedpur, has been awarded D. Phil. degree by the Calcutta University for his thesis: *Study of alloy by X-ray and other methods.*

PATENTS

Patents Filed

86823: A new process for the production of nitrogenous fertilizers and soil conditioner from coal, lignite and peat—P.N. Mukherjee, J.N. Bhaumik & A. Lahiri, CFRI, Jealgora.

86991: Preparation of polyurethane base printing rollers—N.D. Ghatge & S.L. Kapur, NCL, Poona.

Patents Accepted

76515: A process for the conversion of oilseeds to a material particularly suited for aqueous extraction of protein and oil—V. Subrahmanyan, CFTRI, Mysore.

76516: Improvements in or relating to the process of manufacture of protein and oil from groundnuts and other oilseeds —V. Subrahmanyan, CFTRI, Mysore.

76517: Improvements in or relating to the process of manufacture of protein and oil from groundnuts and other oilseeds—V. Subrahmanyan, CFTRI, Mysore.

76416: A process for the production of efficient fuel from lignite and anthracitic coals having high ash content—D.K. Rao, D.P. Agrawal, K.S. Rao, M.G. Krishna & S.H. Zaheer, RRL, Hyderabad.

77226: New N. haloacyl—2—phenylethylamine derivative—P.B. Sattur, G.S. Sidhu, S.J. Hasan & S.H. Zaheer, RRL, Hyderabad.

76682: A process for the recovery and purification of anthracene, carbazole and phenanthrene and allied chemicals from coal tar fractions in highly concentrated or pure state—D.K. Sen, C.S.B. Nair, A.N. Basu & A. Lahiri, CFRI, Jealgora.

77453: N. (alkylaminoalkyl)—2—phenyl ethylamines—P.B. Sattur, G.S. Sidhu, S.J. Hasan & S.H. Zaheer, RRL, Hyderabad.

76557: Process for synthesis of phenyl-tertiary-n-amino-propionates and propanols—R. S. Kapil, S. N. Mehra, Man Mohan Vohra, J.D. Kohli & Nitya Anand, CDRI, Lucknow.

Patents Sealed

U.K.

906929: Improvements in or relating to a vehicle lamp fitting for vehicles—C.R. Gupta, NPL, New Delhi.

907165: Improvements in or relating to the production of trans—diethylstilbestrol dimethyl ether—C.G. Joshi, J.L. Bose & R.C. Shah, NCL, Poona.

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CSIR NEWS

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INFORMATION SCIENTISTS TO MEET

A four-day conference of information scientists of CSIR organisations will be inaugurated by Dr S. Husain Zaheer, Director-General, Scientific & Industrial Research, at the Central Food Technological Research Institute, Mysore on May 18, 1963. The conference is designed to 'obtain an assessment of the current information activities in the national laboratories and evolve measures for their efficient organisation and utilization.'

The following aspects of information activity will be discussed :

Library and Documentation Services : Document procurement, reproduction and translation ; abstracting and bibliographies ; retrieval and collation of information ; liaison with other institutions (Discussion Leader : Shri B.S. Kesavan).

Research on Information Problems : Flow of information ; information level ; effectiveness of information use (Discussion Leader: Shri A. Rahman).

Industrial Research and Extension Services : Consultancy ; operational research ; technical enquiries ; technical surveys and project reports ; rural extension ; technical training of personnel for industry (Discussion Leader : Dr H.A.B. Parpia).

Dissemination Services : Publications ; symposia and seminars ; films and broadcasts ; exhibitions and demonstrations ; museums (Discussion Leader : Shri B.N. Sastri).

MEETINGS

A meeting of the Executive Council of CGCRI, Calcutta, will be held at the Institute on April 25, 1963 at 3.30 p.m. Prof. S.K. Mitra, F.R.S. will preside.

A meeting of the Civil Engineering & Hydraulics Research Committee will be held in the Conference Room of CSIR Secretariat, New Delhi, on May 7, 1963 at 10.00 a.m. Shri Dildar Husain, Chairman of the Committee, will preside.

PERSONAL

Appointments

Dr Amarjit Singh, Deputy Director-in-charge, CEERI, Pilani, till April 30, 1962 and at present working at the Bell Telephone Laboratories, New Jersey, New York, has been appointed Director of the Institute. He is likely to assume charge of the post in the first week of May 1963.

SARVASHRI Y.A. JAGALKAR & B.K. SAXENA — Junior Scientific Officers, NML, Jamshedpur (March 27, 1963).

Promotions

SHRI S.M. SEN GUPTA, Editor, Publications & Information Directorate, CSIR, New Delhi—Assistant Director, Publications & Information Directorate, CSIR, New Delhi (April 15, 1963).

SHRI I.N. MATHUR, Administrative Officer, CMERI, Durgapur—Deputy Secretary, CSIR Secretariat, New Delhi (April 11, 1963).

DR H.P. BHATTACHARYA & DR Y.N. TREHAN, Senior Scientific Officers : Grade II, NML, Jamshedpur—Senior Scientific Officers : Grade I, NML, Jamshedpur (March 27, 1963).

SARVASHRI R.N. MISRA, B.V. SOMAYAJULU, S.K. RAY & J.E. MANNAR, Junior Scientific Officers, NML, Jamshedpur—Senior Scientific Officers : Grade II, NML, Jamshedpur (March 27, 1963).

SARVASHRI C.R. TEWARY, H. HALDAR, P.C. CHATTERJEE, MRINAL ROY, D.K. DASS & M. SUBRAMANIAM, Senior Scientific Assistants, NML, Jamshedpur—Junior Scientific Officers, NML, Jamshedpur (March 27, 1963).

DR R.L. THAKUR, Assistant Director, CGCRI, Calcutta left for Japan on March 29, 1963 for training in the field of solid state reaction, nucleation and sintering under the Colombo Plan.

DR N.K. PANIKKAR, Director, Indian Programme of International Indian Ocean Expedition, returned to New Delhi on April 17, 1963 after attending the Annual Meeting (April 4-9, 1963) of the Scientific Committee on Oceanic Research (SCOR) of the International Council of Scientific Unions held at Halifax, Canada.

DR B.R. NIJHAWAN, Director, NML, Jamshedpur, has been appointed a Director of Hindustan Steel Ltd.

DR Y. NAYUDAMMA, Director, CLRI, Madras, has been elected President of the Indian Leather Technologists' Association, Calcutta.

DR K.N. SINHA, Officer on Special Duty, CMRS, Dhanbad, has been nominated member of the National Council for Safety in Mines.

SHRI G.D. JOGLEKAR, Assistant Director, NPL, New Delhi, has been nominated member of IEC Working Group for Physical Properties of Carbon Brushes of Indian Standards Institution (ISI).

DR H. L. UPPAL, Assistant Director, CRRI, New Delhi, has been appointed Convener of Soil Testing Procedure & Equipment Sub-Committee newly set up by ISI.

SHRI A.K. MOITRA, Assistant Director, CFRI, Jealgora, has been nominated member of the Committee appointed by the National Productivity Council to study the recommendations made by the Colombo Plan Experts for fuel economy in India.

DR M.L. PURI, Senior Scientific Officer: Grade I, CRRI, New Delhi, has been appointed Convener of the Specification for Kankar Lime Sub-Committee newly set up by ISI.

(Contd. on p. 4, col. 2)

B R I E F S

Solid State Physics

A seminar on Solid State Physics organized by the National Physical Laboratory (NPL), New Delhi in collaboration with the Physics Department of the University of Delhi was inaugurated by Dr S. Husain Zaheer, Director-General, Scientific & Industrial Research, on April 16, 1963.

In his opening address, Dr Zaheer said that seminars are extremely healthy to invigorate the workers intellectually in particular jobs as they help to concentrate and focus ideas and to interpret them.

The seminar will consist of 20 lectures each of two hours' duration delivered by senior members of the staff of the Solid State Physics Division of NPL and Professors from the Physics Department of the University of Delhi.

Pakistan Science Conference

A three-member delegation of scientists consisting of Dr B. Mukherji, Director, CDRI, Lucknow, Dr B.R. Nijhawan Director, NML, Jamshedpur, and Shri Baldev Singh, Industrial Liaison & Extension Officer, CSIR, participated in the All Pakistan Science Conference held at Lahore during March 18-23, 1963.

Leather Science

The *Bulletin of the Central Leather Research Institute* has been renamed *Leather Science* from January 1963 with additional features, signifying the resolve of the Institute to serve the industry in an ever-increasing measure.

Clouds & Rain

A 16-page illustrated popular brochure entitled *Clouds & Rain* has been brought out by the Publications & Information Directorate, CSIR.

The brochure gives an idea of the process of cloud formation and rain and the artificial rain-making experiments being carried out by the scientists of the Rain & Cloud Physics Research Unit, National Physical Laboratory, New Delhi.

NAL Annual Report

A 56-page mimeographed Annual Report of the National Aeronautical Laboratory, Bangalore for 1962-63 has been brought out.

Indian Scientific & Technical Personnel Abroad

Six thousand eight hundred and fifty-three persons with foreign training or qualifications have been enrolled in the Indians Abroad Section of the National Register of Scientific & Technical Personnel by the beginning of this year. Half of them are engineers, about one-third scientists, and one in ten each medical personnel and technologists.

Of the engineers registered, one-fourth are mechanical, one-fifth electrical and one-sixth civil engineers. Among the scientists, chemists and bioscientists form the largest number, Textile and pharmaceutical technologists together account for more than two-fifths of the technologists registered.

U.K. provided facilities for studies and research in medicine and textile technology for a majority of the overseas registrants, while in agriculture and veterinary sciences the majority received their training in U.S.A.

Half of the scientific and technical personnel registered are still abroad pursuing their studies or training.

Foreign Scientists visit National Laboratories

Lord Todd, Cambridge University, U.K., Prof. R. B. Woodward, Harvard University and Prof. V. Prelog, Swiss Federal Institute of Technology visited the National Chemical Laboratory, Poona on March 28 & 29, 1963 and delivered lectures on *Aphid pigments*, *Structure of streptonigrin* and *Structure of rifamycins* respectively.

Dr Ziro Tuzi, Professor, Tokyo Science University and President of Riken Keiki Fine Instrument Co. Ltd., Tokyo and Yoshio Nakajima visited the Central Mining Research Station, Dhanbad on March 30, 1963.

Dr Kvitnitskay Nataliya Nikolaevna, Deputy Director, Ukranian Scientific Research Institute of Communicable Hygiene, Kiev, and Dr Aksuk Anatolic Fedovich, Senior Scientific Member of Erisman's Scientific Research Institute of Hygiene, Moscow, visited the Central Public Health Engineering Research Institute, Nagpur on April 5, 1963. They evinced keen interest in the problems under investigation and also addressed the scientific staff.

Dr W.K.R. Lippert, CSIRO, Australia, visited CBRI, Roorkee and gave a talk on Recent Projects in Architectural Physics at the Department of Building Research, Australia on March 23, 1963.

* * *

The National Aeronautical Laboratory, Bangalore has been recognised by the Panjab University as a centre of research leading to Ph.D. degree in engineering and technology.

Research Papers

P. NILAKANTAN (NAL, Bangalore) —High-speed wind tunnels for aerospace research—*Indian east. Engr.* 104th Annu. No., 1962.

N. SUBRAMANYAN, K. VENUGOPALAN & B. DANDAPANI (CECRI, Karaikudi)—A note on the corrosion of heat exchanger tubes of transformer rectifer coolers. *Curr. Engng. Pract.*, 5 (7) (1962), 8-10.

S.K. RANGARAJAN & K.S.G. DOSS (CECRI, Karaikudi)—Faradaic admittance, a diffusion model II. *J. electroanal. Chem.*, 5 (1963), 114-23.

Research Schemes Terminated

The following research schemes have been terminated with effect from Feb. 28, 1963 :

Electric dipole moment and interaction of solute and solvent—Dr Balkrishna, Allahabad University, Allahabad.

Electro-chemical investigations in fused salt media—Dr H.C. Gaur, Delhi University, Delhi.

Investigation of crystal structures of frozen organic liquids, etc.—Prof. S.C. Sarkar, Indian Association for the Cultivation of Science, Calcutta.

Role of solvent, temperature, steric and electronic factors in Dieckmann cyclisation—Dr Jadugopal Dutta, Jadavpur University, Calcutta.

Studies on solutions of high dielectric constant — Dr Ram Gopal, Lucknow University, Lucknow.

Distribution of carrier-free radiation tracers between solids and liquids—Dr K.H. Kar, Delhi University, Delhi.

Studies on the evolution, distribution and function of β-chromosomes etc.—Dr R.L. Paliwal, Indian Agricultural Research Institute, New Delhi.

Morphological and embryological studies in the Santalales—Dr B.M. Johri, Delhi University, Delhi.

RESEARCH IN PROGRESS

National Laboratory

NCL, POONA

Solar Cells—The theoretical and experimental aspects of fabrication of silicon solar cells are under investigation. These cells give promise of efficient conversion of solar energy into electrical energy.

Using boron diffusion technique, solar cells have been produced. They have open circuit voltage of about 0.45 V. and are capable of delivering currents of the order of 18-20 ma /sq. cm. corresponding to a conversion efficiency of 8-9 per cent.

On the theoretical side, the optimum energy gap has been calculated and the role of p-layer resistance in determining the conversion efficiency and the theory of grid electrode contact have been studied.

The technique of phosphorus diffusion is being perfected and the use of polycrystalline silicon instead of single crystal is being studied theoretically as well as experimentally.

Sponsored Research

Electromigration of Labelled Ions—A new technique for studying self-diffusion and electro-diffusion and electromigration of mono—and polyvalent ions in agar-agar gel media employing corresponding radioactive ions for labelling the systems has been developed. The technique reduces the errors due to direct streaming and convection to a minimum as the water in the gel is immobilized in a semi-rigid state. The self-diffusion coefficients (D) of (i) $^{22}Na^+$ in NaCl (10^{-4}—2.0 *M*), (ii) $^{131}I^-$ in NaI and KI (10^{-5}—0.2*M*) and (iii) $H_2{}^{32}PO^-_4$ in Na_2HPO_4 (3.33×10^{-6}—1.0 *M*) have been determined. The values of D in the first two systems have been found to be higher than those in the aqueous medium. There is variation in diffusion rates in very low concentration range (10^{-5}—$10^{-6}M$) of the supporting electrolytes.

Comparison of the experimental results with those calculated on the basis of Onsager-Fuoss theory for aqueous solutions shows that the mechanism of ionic transport is the same in the two media and that variation of D with concentration and with the nature of the partner ions is also same in both cases.

A hypothesis of 'partial solvation' has been advanced to explain the higher self-diffusion rates of $^{22}Na^+$ in NaCl and $^{131}I^-$ in NaI and KI solutions respectively. A gel-water structure is postulated to explain the variation in very low concentration range of the supporting electrolytes.

The technique permits the measurements of relative ionic mobility (V) and coefficient of electro-diffusion (D_e) of labelled ions under conditions of zero concentration gradient such that the mobility of the ion is unrelated to its partner ions. This permits a verification of the Nernst-Einstein relation between V and D. The data for relative mobility of $^{22}Na^+$ in $NaNO_3$ ($10^{-2}M$ and 0.1 *M*), $^{137}Cs^+$ in $NaNO_3$ ($10^{-2}M$), $^{131}I^-$ in NaI ($10^{-3}M$), $H_2{}^{32}PO^-_4$ in $NaNO_3$ (0.1 *M*) and $^{35}SO_4^{--}$ in $(NH_4)_2SO_4$ (2.5×10^{-4} to $5\times10^{-2}M$) and in Na_2SO_4 ($5\times10^{-3}M$) are of the same order as in aqueous media and a fair agreement of the Nernst-Einstein relation is obtained except for a slight variation of V with the intensity and duration of the field applied.

A marked asymmetry in the electro-diffusion rates in and against the field direction has been observed and the implied anisotropy in the Brownian displacement of ions under electric field has not been observed earlier—H.J. Arnikar, Department of Chemistry, Poona University, Poona.

Nature and Origin of Atmospherics—An all-round study of atmospherics including collection of statistics of atmospherics on four narrow frequency bands (85, 125, 175 and 455 kc/s.), recording of their wave forms (spectral region from 50 c/s. to 300 kc/s.) and locating their sources on 175 kc/s. band has been made. In addition, the intensity of atmospherics on the 85 kc/s. band has also been recorded. The integrated intensity of atmospherics on 27 kc/s. band, especially during the the IGY and IGC periods, is being recorded at Poona. For the location of sources of atmospherics, two instantaneous direction finders with photographic recorders have been installed at Poona and Sangli (a distance of about 120 miles).

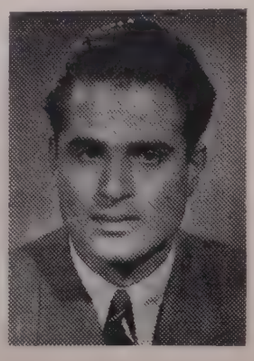
Analysis of the numerical data has led to the following conclusions : (i) diurnal and seasonal variations in the X-activity occur at both stations ; (ii) 125 kc/s. band shows minimum activity at Poona ; (iii) a record of atmospherics received on 85 kc/s. reveals a new phenomenon known as the 'radio meteorological thunderstorm formations' which brings out a peculiar group formation and offers an easy means of predicting the duration of thundery conditions, once they are started ; (iv) the intensity of atmospherics on 27 kc/s. band shows that the level of atmospherics drops down on sunrise and rises up after sunset in a regular manner, but no so well as on the other bands ; there is also a significant positive correlation between the level of atmospherics and the occurrence of flares on the sun ; (v) it is possible to locate and follow the advancing monsoon front with the direction finding unit at Sangli ; the geographical peculiarities of these two stations, particularly those of Sangli, as depicted in the seasonal histograms are easily brought out ; and (vi) the wave-form study at Poona has also led to the determination of the distances of the sources of atmospherics, the association of the different types of wave-forms amongst themselves and with the seasons ; the studies have revealed the double structure of the lower ionosphere—M.W. Chiplonkar, S.M. Vaidya, M.N. Athavale, M.S. Hattiangadi & V.P. Ballal, Department of Physics, Poona University, Poona.

Technique for Non-destructive Testing of Concrete and of Solids—An improved counter-chronograph unit with amplifiers, crystal oscillators, gates and gate amplifiers, scale units with binaries and memory system and a general purpose frequency system has been designed and built. The instrument has been found to be reliable on test not only for non-destructive testing, but also for pulse velocity measurement of materials such as steel, brass, wood and special concrete beams.

(*Contd on p. 4, col. 2*)

Shri G.S. Chowdhury

Shri G.S. Chowdhury, Assistant Director, Regional Research Laboratory, Hyderabad, has been appointed on promotion Deputy Director-in-charge, Central Mechanical Engineering Research Institute, Durgapur (w.e.f. March 6, 1963).



Born in Andhra Pradesh on August 25, 1924, Shri Chowdhury obtained the B. Sc. degree in Mechanical and Electrical Engineering from the Banaras Hindu University in 1946 and worked as Deputy Chief Engineer (Construction) and Works Manager of large sugar plant and engineering works in Madras, Andhra Pradesh and Orissa States. He underwent training in U.K. on machine design and construction with particular reference to slow speed prime movers during 1949-50. He was appointed Scientific Officer (Mechanical Engineering), Central Laboratories for Scientific and Industrial Research, Hyderabad in December 1950 and was promoted as Assistant Director and Head of the Engineering Division, Regional Research Laboratory, Hyderabad in April 1957. In 1959-60 he was deputed to France for specialization in plant design and scale-up techniques under the Indo-French Technical Assistance Programme.

Shri Chowdhury has published a number of papers on coal utilization and power generation and obtained patents for process machinery for small and medium scale industries. He was associated with the setting up of some chemical plants in Andhra Pradesh and also helped in the preparation of project reports for the Kothagudiem Fertilizer Project and Superthermal Station. He was awarded the Best Inventions Award for the year 1959 at the All India Industrial Exhibition, Hyderabad.

Shri Chowdhury is a corporate member of the Institution of Engineers and a member of the Indian Institute of Chemical Engineers.

PERSONAL

(*Contd. from p. 1, col. 3*)

SHRI OM PRAKASH, Senior Scientific Officer, NPL, New Delhi has been nominated member of Pulleys & Fasteners Sub-Committee of ISI.

SHRI V.S. BHANDARY, Senior Scientific Officer, NML, Jamshedpur has been nominated member of the Wrought Steel Products Sectional Committee of ISI.

Dr K.N. Mathur, Director and Shri S.K. Suri, Senior Scientific Officer, CSIO, New Delhi have been nominated to serve as principal and alternate members of the Electrical Instruments and Meters Secondary Committee, ETDC-6 of ISI.

Dr K.N. Sinha, Officer on Special Duty, CMRS, Dhanbad, has been nominated a member of the ad hoc committee constituted by the Coal Board to assist in the installation of the Central Ropeway Scheme.

Dr M.G. Krishna, Deputy Director-in-charge, IIP, Dehra Dun/New Delhi has been nominated member of the Scientific Committee for the Research and Training Institute set up by the Oil and Natural Gas Commission, Dehra Dun.

SHRI M. RAMAIAH, Senior Scientific Officer: Grade I and Shri M.G. Tamhanker, Senior Scientific Officer: Grade II, CBRI, Roorkee have been admitted as members of the American Concrete Institute.

SHRI V.V. SHASHIDARAN, Junior Scientific Officer, CBRI, Roorkee has been admitted as an Associate Member of the Institution of Surveyors (India).

SHRI P.V. GOPALAKRISHNAN, Senior Scientific Assistant, CBRI, Roorkee has been admitted as a Member of the Institute of Information Scientists, U.K.

(*Contd from p. 3, col. 3*)

An experimental transistorized version of frequency measuring system with circuits specially designed with respect to the immediate availability of components in the country has been designed and developed. The circuits have given accurate measurement of varying or fixed frequencies—J.C. Kameswar Rav, Hyderabad Science Society, Hyderabad.

PATENTS

Accepted

78418: *Preparation of barium sodium chromate and barium potassium chromate*—R. Farooqi, D.S. Datar & S.S. Zaheer, RRL, Hyderabad.

78778: *A method of making chocolate coloured bricks from alluvial soils*—L.C. Jain, P.C. Jain & E.S.H. Lal, CBRI, Roorkee.

78016: *Improvements in the production of thermosetting resins*—R.T. Thampy & M. Krishnan, Shri Ram Institute for Industrial Research, Delhi.

79882: *Improvements in or relating to the processing of textiles for imparting abrasion resistance and wash and wear characteristics*—R.M. Desai, N.B. Sattur, J. Varghese, J.C. Patel & V.B. Chipalkatti, Shri Ram Institute for Industrial Research, Delhi.

Sealed

73576: *A simple specific gravity indicator for use in heavy medium coal washing*—A.K. Chakravarty, A.G. Saha, P. Chatterjee, G.G. Sarkar & A. Lahiri, CFRI, Jealgora.

74356: *Preparation of insoluble reaction products of polystyrene for use as cation-exchange materials*—K.P. Govindan & N.R. Krishnaswamy, NCL, Poona.

74452: *Improvements in or relating to the production of tolylene di-isocyanates*—S.R. Goel & R.T. Thampy, Shri Ram Institute for Industrial Research, Delhi.

74680: *Improvements in or relating to electrolytic derusting of corroded metal parts*—K.S. Rajagopalan, N. Subramanyam & Y.V.P.R. Row, CECRI, Karaikudi.

75699: *Improvements in or relating to the conversion of total bile acids into lithocholic acid*—P.N. Rao, NCL, Poona.

75820: *An improved profilograph (area meter) for the measurement of the cross-sectional area of mine airways and for recording the shape of the same*—K.M. Kaiser, CMRS, Dhanbad.

76017: *Solvents and heat exchange liquids from cashewnut shell liquid*—S.C. Sethi, L.K. Doraiswamy & B.C.S. Rao, NCL, Poona.

76018: *New hydrophilic cement*—S.K. Chopra & C.A. Taneja, CBRI, Roorkee.

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CSIR NEWS

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American Academy honours Dr Bhabha

Dr H.J. Bhabha, Chairman of the Atomic Energy Commission and Secretary to the Government of India in the Department of Atomic Energy has been elected a Foreign Associate of the National Academy of Sciences of the United States of America at its annual meeting held in Washington last month in profound appreciation of his services to science.

Dr Bhabha is a member of the Board of Scientific Research and Governing Body, CSIR.

Dr. B. R. Nijhawan

A "Scroll of Honour" was presented to Dr B. R. Nijhawan, Director and Sarvashri R.M. Krishnan, P.K. Gupte, Assistant Directors, J. Mohan, Senior Scientific Officer : Grade I and B.V. Somayajulu, Senior Scientific Officer : Grade II, NML, Jamshedpur for their contribution in research and development work on foundry sands and bonding clays by Shri C. Subramaniam, Union Minister for Steel & Heavy Industries, on behalf of the Indian Institute of Foundrymen at the annual convention of the Institute held on March 31, 1963.

Dr L.A. Ramdas

Dr L.A. Ramdas, Officer on Special Duty, CSIR has been elected a Fellow of the World Academy of Art and Science.

After a distinguished research career in the Indian Meteorological Service, in recognition of which he got the Padma Shree award in 1958, Dr Ramdas continued his researches at NPL, New Delhi for about four years.

He is well known internationally for his researches in physics. On invitation by the National Academy of Sciences, U.S.A., he took part in the Ten-Year Planning Conference on Atmospheric Physics at Boston in 1961. Dr Ramdas has also taken part in several meetings and symposia organised by the World Meteorological Organisation and by Unesco.

Regional Stations for Fruit & Vegetable Preservation

Establishment of two Regional Research Stations for Food & Vegetable Preservation, one at the Regional Research Laboratory, Jammu, and the other at the Jadavpur University, Calcutta, has been approved.

P E R S O N A L

Appointments

SARVASHRI J.S. ANSARI & P.R. BHANDARI—Senior Scientific Officers : Grade II, CMERI, Durgapur (April 29, 1963).

SHRI S. DAS GUPTA—Junior Scientific Officer, CMERI, Durgapur (April 29, 1963).

Promotions

SHRI A.K. BOSE, Assistant Editor, Publications & Information Directorate, CSIR, New Delhi—Senior Scientific Officer : Grade I, CSIR, New Delhi (May 3, 1963).

SHRI P.D. GUJRAL, Senior Technical Assistant, Publications & Information Directorate, CSIR, New Delhi—Assistant Editor, Publications & Information Directorate, CSIR, New Delhi (May 4, 1963).

SHRI D.S. SASTRY, Senior Technical Assistant, Publications & Information Directorate, CSIR, New Delhi—Scientific Reporter, Publications & Information Directorate, CSIR, New Delhi (May 4, 1963).

SARVASHRI M.P. KUMARASWAMY & S.C. NANJUNDASWAMY—Senior Scientific Officers : Grade I, CMERI Durgapur (April 29, 1963).

SHRI J.K. MUKHERJEE, Junior Scientific Officer, NML, Jamshedpur—Senior Scientific Officer : Grade II, NML, Jamshedpur (March 27, 1963).

SHRI B.K. BHATTACHARYA, Senior Scientific Assistant, NML, Jamshedpur—Stores Officer, NML, Jamshedpur (April 15, 1963).

* * *

DR ATMA RAM, Director, CGCRI, Calcutta, has been nominatad member of the Metallurgy Committee of the Department of Atomic Energy for a period of two years.

DR K. N. SINHA, Officer on Special Duty, CMRS, Dhanbad, has been nominated member of the National Council for Safety in Mines, Government of India.

SHRI K. RAY, Assistant Director, National Register, CSIR, New Delhi, has been nominated member of the Central Institute for Labour Research set up by the Ministry of Labour & Employment.

SHRI K. MAHADEVAN, Assistant Director, CMERI, Durgapur, has been nominated member of the Fuel Injection Equipment & Filters Subcommittee of the Indian Standards Institution.

* * *

SHRI JAGDISH PRASAD, Junior Scientific Officer, CGCRI, Calcutta has been awarded D. Phil. degree by the Calcutta University for his thesis : *Physico-chemical properties of some Indian clays and related minerals.*

SHRI CHITTARANJAN RAY, Junior Scientific Officer, CDRI, Lucknow, has been awarded Ph. D. degree by the Edinburgh University for his thesis : *A pharmacological study of transmission in a sympathetic ganglion.*

SHRI P.K. SARKAR, Junior Scientific Officer, CMRS, Dhanbad, has been awarded D. Phil. degree by the Calcutta University for his thesis : *Studies on the bound form of nicotinic acid (Niacinogen).*

SHRI A. VISWESWARA RAO, Junior Scientific Officer, CSMCRI, Bhavnagar, has been elected an associate member of the Indian Institute of Chemical Engineers.

B R I E F S

Review of Research under Chemical Research Committee

The Committee sponsored 130 research schemes during 1962-63 in the different fields of chemistry. Research units and schools of specialized knowledge were established in certain areas of chemistry.

In physical and inorganic chemistry, most of the work carried out has been of fundamental nature and significant contributions have been made in the following fields: (i) Thermodynamic properties of mixtures, (ii) degree of branching in high polymers, (iii) mechanism of vulcanization of rubber, and (iv) electrochemistry of proteins, polar solids, polyelectrolytes and complexes.

Fundamental contributions have also been made in the synthesis of some naturally occurring complex organic compounds. Some of the outstanding syntheses are : (i) anthraprogesterone and 19-nor-etiocholanic acid; (ii) C_{27}-pentacyclic hydrocarbon, a supposed dehydrogenated product of ergesterol ; (iii) (±)-xanthoperyl methyl ether and (±) sugiyl methyl ether; (iv) meroquinine ; and (v) key intermediates in the synthesis of triterpenoids, and conessine. Stereochemistry at C_3 and C_{16} positions has been determined. This is expected to be useful in evolving a continuous process for the manufacture of indanthrone and dibenzanthrone.

Processes have been worked out for the production of several industrial chemicals like (i) maleic anhydride (from benzene using fused and bonded vanadia catalysts) for use in plastics and paint industry ; (ii) polyester (from terephthalic acid and ethylene glycol) for use in coating film and fibre ; (iii) ethylene oxide (from alcohol) for use in the production of glycols and synthetic resins ; and (iv) vinyl acetate for use in synthetic resins.

Biochemical investigations include such fascinating topics as influence of gonadal, pancreatic pituitary and adrenal hormone on lipid, amino acid and carbohydrate metabolisms, biosynthesis and modes of action of antibiotics like mycobacillin, nystatin and amphotericin b, mechanisms underlying biosynthesis, intestinal absorption, nutritional significance and the role in reproductive physiology of water-soluble vitamins like ascorbic acid, thiamine and riboflavin, enzymic conversion of vitamin A_1 and A_2 to their metabolically important products of profound biological significance.

In the field of applied biochemistry, efforts have been made with some success to find a mixed inorganic antiseptic to preserve and prolong the life of jute fibres by preventing their decomposition by jute-decomposing fungi. Storage life of certain fruits has been increased by such techniques as exposure to low temperature, wax coating and Alkathene packing. The finding that sulphide fermentation by *Desulphovibrio rubentschikii* in distillery spent liquor, an industrial waste, brings down its high oxygen demand load is also of significance

International Indian Ocean Expedition

A marine science seminar was held at the Andhra University, Waltair on April 26 & 27, 1963, under the joint auspices of the Andhra University, Indian National Committee for Oceanic Research, U.S. Information Service and U.S. Biology Programme when the U.S. research vessel, *Anton Bruun* called at Vizag on April 25, 1963 at the end of her first cruise in the Bay of Bengal. A number of leading Indian scientists and the U.S. scientists on board the ship participated. The U.S. group of scientists led by Prof. E.C. La Fond presented their first cruise results in different branches of oceanography. Four of the Indian scientists who participated in the cruise also presented their results. This was followed by interesting discussion in which all the scientists actively participated.

After the seminar, the ship *Anton Bruun* sailed from Vizag on a short cruise (April 28 to May 3, 1963) to Madras and carried out further observations along the east coast. In this cruise, Dr N.K. Panikkar, Director, Indian Ocean Expedition, also participated.

Annual Technical Report CSIR : 1961-62

The Annual Technical Report of the Council of Scientific & Industrial Research for 1961-62 has been published. The report summarises in 252 pages the progress of research in the national laboratories, research centres, schemes under different research committees and grant-in-aid schemes under retired scientists. Summaries of investigations under schemes which were terminated during the year are also included.

The report also includes 76 pages of the following four appendices : (i) research schemes initiated, (ii) grant-in-aid to research scientists, (iii) research papers published, and (iv) patent applications filed in India and abroad.

Annual Report CSIR, 1962-63

The Annual Report of the Council of Scientific & Industrial Research for 1962-63 (pp. 30+68) has been published.

The report includes, among other things, expansion programmes of the Council's institutions, important administrative changes in the Council, and brief summaries of achievements of national laboratories, co-operative research associations and of sponsored research projects. Also included in the report are : lists of members of the Society, Governing Body, Board, heads of national laboratories/institutes, and members of executive councils/planning committees of national labaratories/institutes and of research committees, besides 10 appendices and annual accounts and balance sheet of CSIR for the year ending March 31, 1962.

Chemical Process Design : A Symposium

Proceedings of the symposium on 'Chemical Process Design, organized by the Chemical Research Committee of CSIR during July 24-25, 1961 at the Department of Chemical Engineering, Indian Institute of Science, Bangalore have been published.

The 204-page publication includes 22 papers presented and discussed at the symposium, grouped under the heads : Chemical Process Development, Chemical Process Equipment and Operating Experiences of Chemical Production Plants.

RESEARCH IN PROGRESS

National Laboratories

NPL, NEW DELHI

Searchlight Carbons—A process for producing searchlight carbons from indigenous raw materials has been developed at the Laboratory. So far, only imported carbons have been used in searchlights.

These searchlight carbons are expected to cost about 4 per cent less than the imported ones and compare favourably with foreign products.

A searchlight using these carbons has been installed at the Laboratory and is switched on for two hours every Friday. Its beam can be seen over a radius of about 10 miles.

CFTRI, MYSORE

Box Strappings from Indigenous Fibres—Straps from paper and indigenous fibre materials like hemp, jute, sisal, have been prepared and found to be of sufficient strength for strapping paper board and wooden boxes. The tensile strength of 1.5 cm. wide straps varies from 70 to 80 kg./sq. mm. with an elongation of 8 per cent. The cost of preparing the straps is very low. A new gripping arrangement for using these straps has also been developed.

CSMCRI, BHAVNAGAR

Chlorophyll from Marine Algae—The chlorophyll content in eleven different species of algae collected from Saurashtra coast was determined. Of these, *Caulerpa* species contained maximum amount of total chlorophyll (0.36% on dry basis); this is double the quantity of chlorophyll in alfa alfa, a commercial source of chlorophyll. Chlorophyll and chlorophyll compounds are used as colouring materials for liquors, soaps, foods, etc. in medicine.

RRL, HYDERABAD

Insect Control by Sterilization—Since most of the insect pests are developing resistance to insecticides, a new technique of controlling insect population by using chemosterilants was tried on a laboratory scale.

Laboratory-reared *Musca nebulo* (housefly) and *Dysdercus cingulatus* (red cotton bug) when treated with low concentrations of Apholate (a chemosterilant, supplied by the Squibb Institute for Medical Research, New Brunswick, U.S.A.) produced sterility in both sexes. The sterilized females did not lay eggs and the eggs laid by fertile females that mated with sterile males did not hatch.

NAL, BANGALORE

Shock-wave Position on Airfoils—Sinnott's technique for predicting shock-wave position on airfoils at transonic speeds has been applied to the inviscid theories of Spreiter, Rotta and Hosokawa to assess the improvement thus brought about for comparison with experiments in the case of two-dimensional non-lifting circular arc airfoils. The shock position, shock upstream pressure, drag and pressure distributions for two typical cases thus predicted were compared with experimental results.

It was found that the shock position thus obtained did not follow the similarity rule obtained from inviscid theories but followed the parameter used by Sinnott. The shock position was very much improved in comparison with the unmodified theories. However, it corresponded more to the downstream sonic point rather than to the experimental shock position.

For thicker airfoils, Sinnott's method did not give satisfactory results beyond Mach 0.85 ($M\infty$), while for thinner airfoils, it was satisfactory up to Mach 0.97 ($M\infty$). Thus the application of Sinnott's technique not only leads to a definite improvement in predicting shock positions but also to almost the same results whatever theory is used—N.R. SUBRAMANIAN & D. TIRUMALESA.

Sponsored Research

Synthesis in the Diterpene Series—A new synthesis of 1,2,3,4,9,10,11,12-octahydro-1,1,12-trimethylphenanthrene (podocarpa-5,7,13-triene) by the concerted cyclisation of appropriately substituted ω-arylalkanols, viz. 4,8-dimethyl-1-phenylnon-7-en-4-ol and 4,8-dimethyl-1-phenylnonan-4,8-diol, has been developed. The stereochemistry of the product has been determined by controlled chromic acid oxidation, the 11α-epimer being oxidised to 9-oxo- and the 11β-epimer to 9,10-dioxopodocarpatriene, separable by chromatography.

The method has been employed for the synthesis of the ferruginol group of diterpenoids.

A very convenient procedure has been worked out for the preparation of β-4-methoxy-3-isopropylphenylethanol and the corresponding propanol, required for the synthesis of a number of diterpenes. The procedure consists in alkylating *p*-bromoanisole using sulphuric acid (80%) and isopropyl alcohol to yield 4-bromo-2-isopropylanisole and converting the latter to β-4-methoxy-3-isopropylphenylethanol and thence to the propanol. The alcohol was employed for the synthesis of 6-hydroxy and 6-methoxyretene, two of the most important dehydrogenation products of ferruginol, sugiol, hinokiol, and 6-hydroxyabietic acid, by usual procedure. This is perhaps the first direct synthesis of these two phenanthrene derivatives.

The methyl ether of (±)-sugiol, a ketophenolic diterpene, has been synthesised by two routes. The starting materials were 4,8-dimethyl-1-(3' - isopropyl-4' - methoxyphenyl) nonan-4,8-diol and 4,8-dimethyl-1-(3'-isopropyl-4'-methoxyphenyl) non-7-en-4-ol respectively, each of which was cyclised by polyphosphoric acid to a stereoisomeric mixture of 5α- and 5β-(±)-12-methoxy-13-isopropylpodocarpatriene. The product, on chromic acid oxidation and chromatographic separation, furnished a *trans*-monoketone, m.p. 125-7°, identical with (±)-sugiyl methyl ether, and a yellow *cis*-diketone, (±)-xanthoperyl methyl ether, m.p. 205°, as a minor fraction. The identity with the natural products was established in each case by ultraviolet and infrared absorption

spectra. A third ketone was isolated in traces and identified as 1,4-di-(3-isopropylanisoyl) butane.

(±)-Sugiyl methyl ether was reduced to (±)-ferruginyl methyl ether by catalytic hydrogenation.

This is the first direct synthesis of (±)-sugiyl methyl ether and (±) -xanthoperyl methyl ether—D. NASIPURI & (MISS) M. GUHA, University College of Science & Technology, Calcutta.

Study of Intracellular Structures of the Cancer Virus—The differences in the mitochondrial characteristics in the different biological phases of growth and function of the virus have been studied microscopically, using tissues taken from the stratified squamous epithelium of human cervix. A comparative morphological and biochemical study on rat liver treated *in vivo* with dimethylnitrosamine (DMN), a liver carcinogen, at doses 20 to 100 mg./kg. body weight during a time range of 2-20 hr has also been made using the electron microscope. The following inferences have been drawn from the studies: (i) In normal stratified epithelium of human cervix, mitochondria are concerned with the growth process with or without any relationship to differentiation and functionation; (ii) capacity of mitochondria liver homogenates to incorporate labelled amino acids into protein is reduced in *in vivo* treatments for 2-3 hr; prolongation of *in vivo* treatment to 20 hr damages the liver cytoplasm and indications of necrobiosis occur; (iii) marked changes occur only in the endoplasmic reticulum; (iv) an increase in the glycogen content of the liver occurs in low doses where biochemical stimulation of amino acid incorporation is observed; (v) the structural changes which are reflected in the secondary stimulation of the microsomal functions are a marked swelling of the rough endoplasmic reticulum and appearance of great amounts of glycogen clusters in the regions of the enlarged smooth endoplasmic reticulum. The investigations are significant as they open up a new field of study for understanding the process of carcinogenesis in the case of carcinogenic amines—S. MITRA & P. DE, Chittaranjan National Research Centre, Calcutta.

PATENTS & PROCESSES

Patents Filed

87434 : *Acid washing, scouring, bleaching and softening of tannery goat hair, wool, buff and camel hair* —S.K. Barat, CLRI, Madras.

87435 : *Dyeing of wool, hair and other keratinous fibres into a fast non-bleeding jet black shade*—S.K. Barat, CLRI, Madras.

U.S.A.

259400 : *A process for the manufacture of high alpha cellulose dissolving grade pulps by alkaline pulping method*—G.M. Vyas, D.S. Bendale & M.B. Mahajan, NCL, Poona.

Patents Accepted

78015 : *Process for the extraction of tar acids*—D.K. Sen, C.S.B. Nair, A.N. Basu & A. Lahiri, CFRI, Jealgora.

78780 : *An improved process for the preparation of carbon monoxide detector tubes*—A.K. Ghosh, D.P. Rajwar & B. Bakshi, CMRS, Dhanbad.

77223 : *Bed load sampler*—H.L. Uppal, Irrigation & Power Research Institute, Amritsar.

Water-proofing of Irrigation Channels

The Central Road Research Institute, New Delhi, while carrying out research on the engineering properties of soil, found that the permeability of soil can be considerably reduced by treating it with a special type of bituminous material. Incidentally, this technique has found favour with the farmers in cutting down the seepage through irrigation channels, which is generally of the order of 30-40 per cent in alluvial soils and still higher in case of predominantly sandy soils.

The technique consists in adding a bituminous mixture to the ordinary mud plaster as used on mud houses in the villages and then applying it to the irrigation channels in thickness of about half an inch. The plastered channel, after it has been allowed to dry, can be used for irrigation.

Some preliminary trials have been made successfully in the case of tube-well irrigation at Meerut and Aligarh for channels in length of about 1,000 ft each with a capacity of 30-40 thousand gallons per hour. The cost of treatment of the channels will be about Re. 1.00 per running foot and the channels do not require any special maintenance.

The existing practice of reducing seepage, using pucca drains made of brick tiles with cement-sand plaster, costs Rs 3-4 per running foot.

Production of Chemically Resistant Covering Materials

A process has been developed at the National Chemical Laboratory, Poona for producing from cashewnut shell liquid stable, homogeneous and chemically resistant covering materials like sheets and structure required for laboratory work benches, flooring and in lining for tanks used for transporting alkalies and acids.

The process consists in reacting cashewnut shell liquid with hexamine and compounding the product obtained with natural or synthetic rubber in the presence of compounding ingredients, and then moulding the resulting mix into sheets by calendering and into hard tiles or porous structures of desired dimensions and shapes using hydraulic press. Most of the raw materials used in the process are available indigenously.

Parties interested in the commercial development of the process may contact the Executive Director, National Research Development Corporation of India, Mandi House, Lytton Road, New Delhi.

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CSIR NEWS

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MEETING

A meeting of the Executive Council of the Regional Research Laboratory, Jammu, will be held in Srinagar on June 12, 1963. Bakshi Ghulam Mohammed, Prime Minister of Jammu & Kashmir, will preside.

CECRI Refresher Courses

The Central Electrochemical Research Institute (CECRI), Karaikudi will be holding, as in the previous years, the following three refresher courses for the benefit of technical personnel in industry and government organisations: (i) *Electroplating* (12 weeks), (ii) *Storage battery technology* (8 weeks), and (iii) *Corrosion and its prevention* (5 weeks). The first two courses will commence from August 1, 1963 and the third from October 1, 1963. Prospectus and application forms may be had from the Director, CECRI, Karaikudi on remittance of Re 1.00 by money order.

CSIO Service Department

The Service Department of the Central Scientific Instruments Organisation (CSIO) has been undertaking service work for laboratory type, electric and electronic instruments from hospitals, national and Defence laboratories, educational institutions and public establishments. The Department will henceforth accept work from industrial establishments also. Intending parties may contact either the Director, CSIO, CSIR Building, Rafi Marg, New Delhi or the Officer-in-charge, Service Department, CSIO, Kashmere Gate, Delhi.

PERSONAL

DR AMARJIT SINGH assumed charge as Director, CEERI, Pilani on May 9, 1963.

Appointments

SHRI BASANT SINGH—Senior Technical Officer: Grade I, CBRI, Roorkee (April 1, 1963).

SHRI B.D. SRIVASTAVA—Senior Scientific Officer: Grade I, CBRI, Roorkee (April 29, 1963).

SHRI B.R.L. ROW—Pool Officer, CECRI, Karaikudi (April 6, 1963).

SHRI R. SAVARI RAJ—Accounts Officer, CECRI, Karaikudi (March 11, 1963).

SHRI O.P. SHARMA—Accounts Officer, CBRI, Roorkee (April 30, 1963).

Promotions

SHRI M.P. DHIR—Senior Scientific Officer: Grade II—Senior Scientific Officer: Grade I, CRRI, New Delhi (April 23, 1963).

DR P.B. MATHUR, Senior Scientific Officer: Grade II—Senior Scientific Officer: Grade I, CECRI, Karaikudi (May 2, 1963).

SHRI B.A. SHENOI, Senior Scientific Officer: Grade II—Senior Scientific Officer: Grade I, CECRI, Karaikudi (May 13, 1963).

SHRI T.R. SEHGAL & DR. TARLOKI NATH, Junior Scientific Officers—Senior Scientific Officers: Grade II, CRRI, New Delhi (April 22, 1963).

SARVASHRI GYAN PRAKASH, M.R. CHATTERJEE & JOGINDER LAL, Senior Scientific Assistants—Junior Scientific Officers, CRRI, New Delhi (April 22, 1963).

SARVASHRI R. SRINIVASAN & M.I.A. SIDDIQI, Junior Scientific Officers—Senior Scientific Officers, Grade II, CECRI, Karaikudi (May 2, 1963).

SARVASHRI N.V. PARTHASARATHY & S. VISVANATHAN, Senior Scientific Assistants—Junior Scientific Officers, CECRI, Karaikudi (May 2, 1963).

Transfer

DR N. SINGH, Senior Scientific Officer: Grade II, NBG, Lucknow—RRL, Jammu (April 22, 1963).

* * *

PROF. S.R. MEHRA, Director, CRRI, New Delhi, attended the second Asian Regional Conference of the International Society of Soil Mechanics & Foundation Engineering held at Tokyo (April 29—May, 14, 1963). He resumed charge of his office on May 15, 1963.

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DR S. H. ZAHEER, Director-General, Scientific & Industrial Research and DR M. G. KRISHNA, Deputy Director-in-charge, IIP, Dehra Dun have been nominated members of the Petrochemicals Advisory Council constituted by the Ministry of Mines & Fuel for the development of petrochemical industries in the country during the Third Five Year Plan.

DR M. G. KRISHNA, Deputy Director-in-change, IIP, has been nominated principal member of Coal Tar Products Sub-Committee of the Indian Standards Institution.

The following have been nominated members of some of the Expert Sub-Committees of the Indian Pharmacopoeia Committee, constituted for revising the Indian Pharmacopoeia:

DR I.C. CHOPRA, Deputy Director-in-charge, RRL, Jammu; DR L. D. KAPUR, Senior Scientific Officer, RRL, Jammu; DR NITYANAND, Senior Scientific Officer, CDRI, Lucknow; DR G. S. SIDHU, Deputy Director-in-charge, RRL, Hyderabad; and DR S.C. DATTA, Assistant Director, CIMPO, Lucknow.

DR A. SREENIVASAN, Deputy Director, CFTRI, Mysore, has been nominated member of the Biological and Medical Committee and Food & Agricultural Advisory Committee of the Department of Atomic Energy, Bombay, for a period of two years.

SHRI B.K. GHOSH, Senior Scientific Assistant, IIBEM, Calcutta, has been awarded the D. Sc. degree by the Calcutta University for his thesis: *Action of some drugs and lytic agents on the leptomonal form of* Leishmania donovani (*in relation to the action of nystatin*).

SHRI MOHD YASEEN who worked on kinetics and mechanism of coagulation of hydrophilic colloids under a CSIR scheme has been awarded the Ph. D. degree by the Lucknow University.

BRIEFS

WHO Expert visits CPHERI

Prof. Luis F. Mantilla, Regional Adviser in Environmental Health, World Health Organisation (Regional Office), New Delhi, visited the Central Public Health Engineering Research Institute, Nagpur during April 16-19, 1963. He evinced keen interest in the research work being carried out at the Institute. He also gave a talk on the current problems of public health engineering.

RRL Hyderabad Annual Report

The Annual Report of the Regional Research Laboratory, Hyderabad for 1961-62 has been published. The 138-page report summarises the progress of 54 research projects and schemes including operational research. There are five appendices which include, among other items, research & review papers published and patents taken by the Laboratory.

The report is printed on the handmade paper manufactured by the Laboratory.

CRRI Annual Report

The Annual Report of the Central Road Research Institute, New Delhi for 1961-62 has been published.

The 49-page report summarises the progress of research work carried out by the different divisions of the Institute, viz. Soils, Flexible Pavements, Rigid Pavements, Roads, and Traffic Engineering, Economics & Statistics. Also included in the report are seven appendices, one of which lists publications of the Institute since its inception up to March 31, 1962.

NAL Brochure

A 38-page brochure highlighting the achievements of the National Aeronautical Laboratory, Bangalore has been published. It contains 20 illustrations.

New Publications

Building Digest No. 17, CBRI, Roorkee—Prefabricated timber hut.

Research Pap. No. 5—Ref. CMRS V3/5 (Feb. 1963), CMRS, Dhanbad —Illumination survey in an Indian coal mine.

A study of hourly wind speeds at Bangalore (Central Observatory) from the point of view of wind power utilisation, Tech. Note No. TN-WP-15-62, NAL, Bangalore (R. Viswanathan & S. Janardhan).

A study of the hourly wind speeds at Poona from the point of view of wind power utilisation, Tech. Note No. TN-WP-16-62, NAL, Bangalore (R. Ramanathan & K. N. Narasimhaswamy).

A study of the hourly wind speeds at Ahmedabad from the point of view of wind power utilisation, Tech. Note No. TN-WP-18-62, NAL, Bangalore (R. Viswanathan & S. Janardhan).

A study of the hourly wind speeds at Bombay (Santa Cruz) from the point of view of wind power utilization, Tech. Note No. TN-WP-19-62, NAL, Bangalore (R. Ramanathan & K.N. Narasimhaswamy).

The contribution from wind power to the energy requirements of India, Tech. Memorandum No. TM-WP-1-62, NAL, Bangalore (K. P. Ramakrishnan & K.R. Sivaraman).

Research Papers

R. K. Kochhar & R. K. Bhatnagar (C S I R Scheme)—Preparation of monoglycerides from castor oil and other oils : Part I. *Indian Oilseeds J.*, **6** (1962), 20.

S. K. Dey, R. K. Kochhar & R. K. Bhatnagar (C S I R Scheme)—Preparation of monoglycerides from castor oil : Part II. *Indian Oilseeds J.*, **6** (1962), 144.

S. K. Dey, R. K. Kochhar & R. K. Bhatnagar (C S I R Scheme)—Preparation of monoglycerides from castor oil : Part III. *Indian Oilseeds J.*, **6** (1962), 215-25.

S. Kumar & B. B. Nag (CGCRI, Calcutta)—Effects of fluxing ingredients on the properties of magnesium calcium-aluminosilicate glasses. *Trans. Indian ceram. Soc.*, **21** (4) (1962), 107.

K. S. Vishwanathan (N A L, Bangalore)—Temperature effect on light scattering in crystals. *Canad. J. Phys.*, **41** (1963), 423.

Dinesh Mohan, G. R. S. Jain & Virendra Kumar (CBRI, Roorkee)—Load bearing capacity of piles. *Geotechnique*, **13** (1963), 76.

J. C. Sadana, R. Rama Rao & M. D. Joshi (NCL, Poona)—The purification of nitrate reductase of *Achromobacter fischeri*. *Biochem. biophys. Acta*, **67** (1963), 340.

P. V. Gopalakrishnan & P. V. Krishnan (C B R I, Roorkee)—Comfort in buildings. *Indian Architect*, **5** (3) (1963), 22-24.

S. K. Chopra, Krishan Lal & S. N. Narain (CBRI, Roorkee)—Bloated clay aggregates from slit deposited at Calcutta water works. *Indian Concr. J.*, **34** (2) (1963), 46-50.

M. Surendraiah (NAL, Bangalore) —An analysis of the basic transonic flow characteristics of ventilated nozzles. *Indian J. pure appl. Phys.*, **1** (1963), 110.

R. Ramaswamy, M. S. Venkatachalapathy & H. V. K. Udupa (CECRI, Karaikudi)—Improvement in the electrolytic preparation of iodoform. *J. electrochem. Soc.*, **110** (1963), 294.

C. G. Balachandran & P. S. Bhandari (CBRI, Roorkee)—Sound absorption properties of porous materials. *Indian J. pure appl. Phys.*, **1** (1963), 152.

A. K. Deb & Amar Singh (CBRI, Roorkee)—Fibre glass electrical resistance moisture metres for long term measurements of *in situ* soil moisture. *J. Indian Soc. Soil Sci.*, **11** (1) (1963), 65.

Research Schemes Terminated

The following research schemes have been terminated with effect from March 31, 1963 :

Chemical investigation of Indian medicinal plants — Dr T. R. Govindachari, Presidency College, Madras.

Constitution of the main constituents of the essential oils from the buds of surangi (*Ochrocarpus longifolius.*)—Dr. V. G. Kulkarni, Dept. of Chemistry, J. S. S. College, Dharwar.

Studies on the hydraulic and other properties of granulated blast furnace slag in relation to composition—Dr D. Lahiri, University College of Science and Technology, Calcutta.

Correlation of different methods of measuring mechanical losses in an internal combustion engine—Prof. K. Achuthan Nair, Government College of Technology, Coimbatore.

Marine geology—Dr M. Poornachandra Rao, Dept. of Geology, Andhra University, Waltair.

Some aspects of nuclear geology —Dr V. Aswathnarayana, Dept. of Geology, Andhra University, Waltair.

RESEARCH IN PROGRESS

National Laboratories

CFTRI, MYSORE

Mechanical Drying of Arecanuts—Defective processing and storage of arecanuts (supari) affect their quality. Traditional processing is handicapped in the sun-drying stage by adverse climatic conditions prevailing in areas where it is grown, viz. Kerala, Assam and West Bengal, and where peak harvest coincides with the monsoon. With a view to overcome these difficulties a suitable, air blown—through flow type—drier has been designed and fabricated at the Institute. The drier works on ordinary firewood as fuel. The flue gas indirectly heats, in a tubular heat exchanger, the air blown into the cabinet. The drier is suitable for producing the two principal varieties, *Kalipak* from mature green nuts and *Chali* from ripe ones. Field trials in Kerala and inland and coastal Mysore have shown that the drier is suitable for the production of quality nuts. The drier is simple in design and can be fabricated at any moderately equipped workshop.

CFRI, JEALGORA

Mineral Matter in Coal—Two methods are in vogue for estimation of mineral matter in coal namely, the one by W. Radamacher and P. Morhauer and the other by H. H. Brown *et. al.* The first method involves removal of mineral matter by extraction with hydrochloric and hydrofluoric acids and the second, selective oxidation of coal at low temperatures.

Investigations on the estimation of mineral matter in Raniganj coals have resulted in development of a simplified experimental technique of the first method and modification of the second.

According to the method developed in the first case it is not necessary to separate the demineralized coal quantitatively as in the case of Radamacher & Morhauer's method. It is enough if the carbon content of demineralized coal is estimated after correcting for moisture, residual ash, pyrites and adsorbed HCl. The mineral percentage is easily calculated from the equation : Mineral matter = 100 $(1-C_1/C_2)$, whese C_1 is the percentage carbon in the original and C_2 is that in the demineralized coal. Experiments on low temperature oxidation of coal have indicated that a little of carbon (0.1 – 0.2%) is left as residue even after prolonged oxidation at the temperature of 360° ± 10°. A method has been developed for determination of the percentage of this unburnt carbon residue and thus a correction for the value of mineral matter by the Brown's method has been found necessary.

Modification of Brown's method for determination of water of hydration of mineral matter in coal has also been developed. It consists in removing the organic coal substance by direct oxidation at 370°±10°, incinerating the mineral residue at 800° in a current of oxygen in a tube furnace (normally employed for carbon and hydrogen determination in coal) and trapping the water of hydration in an Anhydrone tube—K. K. KANJILAL, M. L. MUKHERJEE & N. G. BANERJEE.

CFTRI, MYSORE—Mechanical Drier for Arecanut

CGCRI, CALCUTTA

Classification of Mica—A self-contained portable mica test set for the objective classification of mica, based on its electrical properties, has been developed. The results obtained by using the test set were found to be in good agreement with those using a Boonton Q meter and grid electrode as per ASTM D748. To explore the area of agreement on the electrical quality of mica on an international basis, inter-laboratory tests have been arranged. Samples of mica blocks and capacitor films standardised with the apparatus developed at the Institute have been tested at the Bell Telephone Laboratories using their own apparatus and method. The results of preliminary studies are highly encouraging.

CBRI, ROORKEE

Cavity Walls—Cavity walls are popular in the western countries because of their superior performance over the conventional solid walls. They are however not popular in India in view of their high cost as compared to solid walls. Investigations on the cavity walls were taken up at the Institute with a view to reducing their cost so that their use may become popular in the country.

As a result of trials at the Institute, a 20 cm. thick cavity wall having two leaves of brick-on-edge and a cavity of 5 cm. has been devised and subjected to a series of tests. The tests for ultimate compressive strength, lateral strength for free and loaded panels, and impact have shown that the walls satisfy the functional requirements and can be readily adopted on load-bearing walls up to two storeyed buildings and curtain walls in multistoreyed buildings. Besides having better thermal and sound

CBRI, ROORKEE—Cavity Wall under Construction

insulation, this type of wall saves about 30 per cent of bricks and mortar, as compared to a 9 in. thick solid wall and results in saving of space, which permits better utilisation of the permissible plinth or floor area. The exposed frogs can provide an attractive finish, or serve as an excellent key for the plaster. Further, internal finish is less susceptible to a damage because of the high resistance to rain penetration.

Work studies carried out at the Institute indicate that a mason can construct 40 sq. ft of this type of wall in 8 hours. In spite of incorporating ties, the cost works out to be 13 per cent less than that of 9 in. solid walls—P. R. RAO.

CEERI, PILANI

Microwave Circulator—A coaxial stripline *Y*-junction circulator suitable for use at 21.0 cm. wavelengths (radiometry band) has been designed and fabricated using General Ceramic R-4 ferrite. The circulator employs standard N-type female connectors for coupling to other devices. The symmetry of the device has been tested and found to be good. The voltage standing wave ratio is better than 1.4 over a 400 Mc bandwidth. The attenuation in the reverse direction is greater than 15 db. over a 250 Mc bandwidth. An electromagnet is used to provide the required magnetic field for circulator action. The frequency band of circulation can be varied somewhat by changing the biasing magnetic field. The three-port circular is used for isolation purposes in masers and low-noise parametric amplifiers.

Sponsored Research

Study of Organic and Inorganic Flames—A study of the relative effects of various operating conditions upon the energy and character of radiation emitted by flames of organic and inorganic compounds has been in progress. The spectrum of the inner cone of butane-air flames revealed C_2(Swan), CH, OH and HCO bands. The position of maximum of intensities of these radicals differred to an appreciable extent from radical to radical. When the conditions for the dissociation were favourable near the ratios corresponding to their maximum intensities the fall of their intensities was reduced. On the basis of the excessive positions of their maxima on the scale of air-fuel ratio and other studies in respect of combustion these radicals have been fitted in in the combustion mechanism. For understanding the flame processes the flame propagation has also been studied. Burning velocities have been measured by the method of shadow photography for the same set of air-fuel rations. Maximum velocity has been found at a ratio close to that corresponding to the maximum intensity of CH (viz. λ 4300). A study of velocity distribution along the contour of the luminous zone showed that the maximum velocity was reached at a point where the gas velocity was equal to the average velocity. The limits of inflammability and blow of limits were also determined for varying amounts of fuel.

The effects of some diluents and additives on the flame processes were also studied. Carbon dioxide increased the carbon formation but reduced the light yield while chlorine increased C_2 intensity reducing carbon formation. A quenching effect on most of the radicals was observed. This is in conformity with earlier workers' observations except in the case of HCO—B.B. LAUD & L.N. SATHE, Physics Department, Poona University, Poona.

PATENTS & PROCESSES

Patents Filed

87428 : *Improvements in or relating to the decolourization of mineral substances such as clay or sand*—Atma Ram, S. Sen & S. Guha, CGCRI, Calcutta.

87815 : *Process for the preparation of box strapping from paper and indigenous fibres*—P. Veerraju, B. Anandaswamy, N.V.R. Iyengar & A. Sreenivasan, CFTRI, Mysore.

87816 : *Improvement in the device of studying the electrophoretic velocity of colloidal particles by the movements of the boundary between the colloid and the supernatant electrolyte in a Burton's U-tube under constant current conditions maintained by electronic circuits*—A. Kumar, P. D. Bhatnagar & A. K. Bhattacharya, Agra College, Agra.

Patents Accepted

77080 : *A process for the preparation of ambrettolide*—S. D. Sabnis, H. H. Mathur & S. C. Bhattacharya, NCL, Poona.

77224 : *Synthetic esters as speciality lubricants for low temperature performance and particularly for the lubrication of clocks and watches*—K. D. Pathak & B. C. Subba Rao, NCL, Poona.

79596 : *A process for the preparation of calcium based water soluble or dispersible proteins*—M. Srinivasan, CFTRI, Mysore.

Patent Sealed

67461 : *Process for the manufacture of carnallite from sea bittern*—K. Seshadri, G. D. Bhatt & C.J. Dave, CSMCRI, Bhavnagar.

Processes Leased Out

The following processes have been leased out for commercial development to the firms noted in italics.

1. Isojasmone peach aldehyde, NCL, Poona—*S. H. Kelkar & Co.*

2. Anion exchange resin from melamine (Indian Pat. No. 71190), NCL, Poona—*Tulsi Industries*, Poona.

3. Salicylaldehyde (Indian Pat. Nos 52631 & 60864), CECRI, Karaikudi—*Gandhi Shah Chemidyes Industries*, Ahmedabad.

4. Calcium gluconate, CECRI, Karaikudi—*Gandhi Shah Chemidyes Industries*, Ahmedabad.

5. Hot dip aluminizing of ferrous materials (Indian Pat. Nos 55289, 65230 & 57938), NML, Jamshedpur—*Orient Wire Industries Pvt. Ltd*, Calcutta; *Sukhraj Roy Abhey Kumar*, Bihar; *Golden Shaft & Wire Industries*, Howrah; & *United Electric Trading Co.*, Kanpur.

6. Production of fluxes for sub-merged arc welding (Indian Pat. No. 68171), NML, Jamshedpur—*Khem Chand Raj Kumar*, Calcutta.

7. Liquid gold, NML, Jamshedpur—*Gujrat Bullion Refinery*, Ahmedabad.

8. Calcium caseinate (Indian Pat. No. 79596), CFTRI, Mysore—*Geoffrey Manners & Co. Pvt Ltd*, New Delhi.

9. Hot face insulation refractories (Indian Pat. No. 59455), CGCRI, Calcutta—*Kumar Mfg. Co.*, Calcutta.

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CSIR NEWS

VOL. 13 JUNE 10, 1963 : JYAISTHA 20, 1885 NO. 11

INFORMATION SCIENTISTS CONFERENCE

The information scientists of CSIR organisations met at the Central Food Technological Research Institute, Mysore in a conference which was declared open by Dr S. Husain Zaheer, Director-General, Scientific and Industrial Research, on May 18, 1963. Dr V. Subrahmanyan, Director of the Institute, welcomed the delegates to the Conference. In his opening address, Dr Zaheer said that without proper library and documentation service it was practically impossible for science and scientists to make any progress and that applied science cannot make an impact on industrialisation and economic betterment of the country in the absence of facilities for dissemination of scientific information. Operational research, which came into prominence during the last World War, Dr Zaheer felt, was well-suited for planning of scientific research and its application to industry. He emphasised that the conference would play a useful role if it were to be critical of the work done so far.

The four-day Conference discussed in four sessions the following aspects of information activity : (i) Library and Documentation Services, (ii) Research on Information Problems, (iii) Industrial Research and Extension Services, and (iv) Dissemination Services, under the discussion leadership respectively of Shri B. S. Kesavan, Dr H.A.B. Parpia, Shri A. Rahman and Shri B. N. Sastri.

The Conference surveyed current information activities in national laboratories and made several recommendations for efficient organization of information services to meet users' needs. The desirability of publishing an *Indian Science Abstracts* was discussed and a special committee appointed to consider this question in detail.

The creation of a *National Science Library* as a base for documentation services, preparation of a scheme for training technical translators particularly with reference to translation of information material from modern European languages, and provision of facilities for teaching French, Russian and German for research workers in every laboratory were among the important recommendations.

The need for research on information problems such as (i) surveys on reading habits of scientists and useful sources of information, (ii) identification of problems in industry and areas of fruitful research, (iii) information level of scientists and capacity to use information and (iv) socio-economic research was emphasised.

Discussions centred round the role of information scientists in the promotion of industrial research. It was recommended to have a group of competent research workers, who, as members of operational research teams, should plan, allot priorities and follow up the progress. The operational research group, it was felt, should undertake investigatons for industry and also identify problems and thus serve as a feedback to the work of laboratories.

The dynamics of information and communication through printed word, oral communication, demonstration and other media was discussed at length and the need for developing specialized information services in order to ensure quicker results was stressed.

For the popularization of science, the conference welcomed the proposal of CSIR to publlsh a popular science journal in English and recommended that it be published in Indian languages. The provision of necessary facilities in each laboratory in respect of audio-visual aids for helping better and more effective popularization of research results was suggested.

Other suggestions stressed the need for evaluation to find out the utility of the information currently supplied for the users and a code

(*Contd on page 2, col. 3*)

Dr S. Husain Zaheer, Director-General Scientific & Industrial Research, declaring open the Information Scientists Conference.

BRIEFS

I I P Executive Council

SHRI N.N. KASHYAP, Joint Secretary, Ministry of Mines & Fuel, has been nominated in place of SHRI D.D. GUPTA, to represent the Ministry on the Executive Council of the Indian Institute of Petroleum, Dehra Dun.

Grant-in-aid to Research, 1962-63

The total grant made by CSIR to educational and research institutions for undertaking research in specific schemes exceeded Rs. 45 lakhs out of which Rs. 17.3 lakhs were given to six co-operative research associations and the rest to universities, colleges, research departments of the central and State governments, private research organisations and research laboratories attached to industries. Forty colleges and research departments of 27 universities besides 40 other research institutions, were the recepients of grants. Calcutta University received the highest amount (Rs. 2.95 lakhs) followed by Delhi University (Rs. 1.58 lakhs), Indian Institute of Science, Bangalore (Rs. 1.47 lakhs) and Banaras Hindu University (Rs. 1.31 lakhs). Shri Ram Institute for Industrial Research, Delhi received the highest amount among industrial research institutes in the country (Rs. 2.55 lakhs). Statewise, West Bengal received the largest amount (Rs. 7.23 lakhs) followed by Delhi (Rs. 5.2 lakhs), Uttar Pradesh (Rs. 4.81 lakhs), Maharashtra (Rs. 2.60 lakhs) and Andhra Pradesh (Rs. 2.10 lakhs). The learned societies which were the recepients of grants were the Indian Association for the Cultivation of Science, Calcutta, Hyderabad Science Society, Hyderabad and Maharashtra Association for the Cultivation of Science, Poona.

Impact of Research on Building Industry

The proceedings of the conference on 'The Impact of Research on Building Industry' held at the Central Building Research Institute, Roorkee during November 1-3, 1962 have been published as a special number of *Cement & Concrete*.

The 211-page publication (Price, Rs. 8.00) contains 20 papers presented and discussed at the following five sessions : (i) Structures (4), (ii) Foundation Engineering (2), (iii) Efficiency of Buildings (2), (iv) Building Materials (7), and (v) Building Practice and Standardisation (5).

Research Schemes Terminated

The following research schemes have been terminated with effect from Feb. 28, 1963:

Study of diffuse X-ray reflection and growth and determination of elastic constants of crystals—Prof. K. Banerjee, Indian Association for the Cultivation of Science, Calcutta.

Study of weak lines in the L-spectra of elements from tantalum (73) to bismuth (83) using the technique of curved crystal focussing spectrograph—Dr. B.G. Gokhale, Lucknow University, Lucknow.

Production of precision curved surfaces and photographic objectives and projectors—Prof. S. Hari Haran, Madras Institute of Technology, Madras.

Study of organic and inorganic flames—Dr. B.B. Laud, Poona University, Poona.

The nature and origin of atmospherics—Dr. M.W. Chiplonkar, Poona University, Poona.

Study of the nature of atmospherics—Prof. S.R. Khastgir, Calcutta University, Calcutta.

Study on the Budde effect on halogens under electric discharge—Dr. H.J. Arnikar, Banaras Hindu University, Varanasi.

Electromigration of labelled ions in aqueous media—Dr. H.J. Arnikar, Banaras Hindu University, Varanasi.

Non-aqueous acid-base titrations —Dr. M.N. Das, Jadavpur University, Calcutta.

Mechanism of coagulation of lyophobic colloids in non-aqueous media—Dr. B.P. Yadava, Lucknow University, Lucknow.

Investigation of hydrochrysofluorene ring system—Dr. B.K. Bhattacharyya, Jadavpur University, Calcutta.

Determination of molecular weight of addition polymers by end group analysis—Dr. G.C. Misra, Lucknow University, Lucknow.

Studies in addition polymerisation—Dr. G.C. Misra, Lucknow University, Lucknow.

Studies in the cyclo-octane series —Dr. G.S. Saharia, Delhi University, Delhi.

Transference measurements in polybasic acids—Dr. R.D. Srivastava. Lucknow University, Lucknow.

Genetical and biochemical studies of induced mutants of fungi and actinomycetes—Dr P.N. Nandi, Bose Institute, Calcutta.

Preparation of plasticizers and stabilizers for poly (vinyl chloride) resins from vegetable oil fatty acids —Shri R.K. Bhatnagar, Shri Ram Institute for Industrial Research, Delhi.

Chemical modifications for cellulose based on cross-linking reactions—Dr. V.B. Chipalkatti, Shri Ram Institute for Industrial Research, Delhi.

Development of polyurethanes for foams, rubber, adhesives, coatings and fibre—Shri R.T. Thampy, Shri Ram Institute for Industrial Research, Delhi.

Research Papers

(Mrs) RADHA PANT & H.C. AGARWAL (Allahabad University, Allahabad)—Free amino acids of some insect tissue homogenates. *Curr. Sci.*, **32** (1963), 20-21.

(Mrs) RADHA PANT & A.S. KAPUR (Allahabad University, Allahabad)—Chemical investigation of some wild Indian legumes. *Ann. Biochem.*, **23** (1963), 95-100.

(*Contd. from page 1, col. 3*)

of practice for editors and publishers as well as standards for the lay-out and production of publications.

The plenary session of the Conference was presided over by Shri A. J. Kidwai, Secretary, CSIR, when the recommendations pertaining to the various aspects of information science were discussed and were passed.

The Conference also saw the birth of the Institute of Information Scientists, India.

Correction

In the news item under the head 'Rajhara Iron Ore Beneficiation' (CSIR News, Vol. 13, No. 7, p.3), the sentence 'The washed ore fines obtained in the first stage were sintered using non-fluxing and self-fluxing sinter' should be replaced by 'The washed ore fines obtained in the first stage were employed for making non-fluxing and fluxing sinter'.

RESEARCH IN PROGRESS

National Laboratories

CFRI, JEALGORA

Improved Coal Flotation Process—The effect of introducing iron grids in flotation cells on the recovery of clean coal fractions has been studied. Trials with 500 g. coal samples with pulp density of 5 per cent at *p*H 7 using the flotation agents cresylic acid, methyl isobutyl carbinol and a mixture of diesel and pine oils in the ratios of 3 : 1 and 6 : 1 respectively showed that the percentage of recoverable coal in the froth was higher than that obtained without the use of a grid. The percentage recovery in the froth was still further increased by the use of duplicate grids. The investigations proved that higher cell capacity could be obtained by the use of grids in the flotation cells—A. R. Roy, B. B. Konar, G. G. Sarkar & A. Lahiri.

CMRS, DHANBAD

Increasing Coal Output in a Mine—Investigations on increasing the output of coal from a mine in Raniganj Coalfield which has been worked for more than 10 years at a shallow depth were taken up. The method of operating hydraulic stowing was studied in minute detail by observations round the clock. As a result, minor alterations, in the operations were introduced and these led to progressively better performance. The rate of stowing which was restricted to 25-35 tons/hr was ultimately increased to 70-90 tons/hr while the rate of flow of water was maintained at the same level used for the lower rate of stowing. The results indicated that increased output of coal was possible without increasing the rate of flow of water along with the sand for hydraulic stowing.

NAL, BANGALORE

Economics of Wind Electric Generators—The monthly and annual energy output of six types of wind electric generators, viz. Elektro KSV-800 (0.85 kW.), Elektro WV-2 (2 kW.), Electro WVG-2 (2.5 kW.), Electro WVG-5 (5.5 kW.), Allgaier (7.5 kW.) and Dowsett Holdings (25 kW.) have been estimated for 23 stations in India. The output per kW. of installed capacity and the cost per kWh of energy have been worked out theoretically for each machine and station, to assess the relative economics of the machines. The correlation between the energy output and the annual mean wind speed has been examined and a method of estimation of the energy output at a given place from a knowledge of the annual mean wind speed evolved.

From the capital costs of the different types of generators and their annual charges to cover maintenance and depreciation (at 12 per cent) and from the annual charges and the annual outputs of the different generators at different stations, the cost per unit of energy (kWh) for each generator at each station has been worked out.

At Veraval, a very windy station with an annual mean wind speed of 17 km.p.h., the cost per kWh works out to 33 nP. for the Dowsett Holdings and 12 nP. for the Allgaier and WVG-5. At Bombay, a moderately windy station with annual mean wind speed of 12 km. p. h., the costs for the same generators work out to 93, 26 and 26 nP. respectively. Barring a few stations where any generator will be uneconomical, at a majority of the rest, the Allgaier and WVG-5 generators have been found to be nearly equally economical.

Sponsored Research

Some aspects of Nuclear Geology : *Radioactivity of Rocks and their Geological Significance.* Beta activity of 37 rocks drawn from various parts of Andhra Pradesh and alpha activity of 15 samples selected from the above group have been determined. The results reveal that the beta activity of a rock is conditioned by the following mutually related factors : Chemical composition (Fe_2O_3 : FeO ratios, silica, potash, alumina and calcium oxide contents), mineralogical composition (quartz, felspar, and heavy mineral content) and petrogenetic history. The discrepancies in the e.U. contents calculated from alpha and beta activity measurements have been traced to the variations in the concentration of beta emitting 40K and U : Th ratios.

An analysis of the data of gross alpha activity and copper content of 41 samples, drawn from various levels of Mosaboni copper mine (Long. 86° 28' : Lat. 28° 31') of Bihar shows that there is no linear relationship between the two thereby suggesting that there was a time gap between the mineralisation of uranium and copper, though both these elements occupy the same zones in the soda-granite. This conclusion accords well with the geological evidence.

Uranium, cobalt and nickel contents, and alpha activity were determined for 37 rocks drawn from various levels of the same copper mine. It was found that nickel content and radioactivity bear an inverse relationship which is quite in agreement with the geochemistry of uranium and nickel. The cobalt content does not indicate any relationship with radioactivity and is erratic. There is no relationship between the chlorite content of soda-granite and schists and radioactivity but in the solid ore and schists the alpha activity exhibits an inverse relationships to the percentage of opaques (magnetite, ilmenite and pyrites), whereas in the soda-granites the two are directly related.

Geochemical Studies of Uranium. Alpha activity of roots, stems and leaves of plants common in the coastal districts of Andhra Pradesh, has been determined and it is found that the roots contain the highest concentration of uranium, the stems contain the least and the leaves generally contain a little more than the stems. The higher activity of the roots is explained as due to sequestering of uranium in roots since uranium is toxic to the plants.

Comprehensive geochemical studies have been made on the Precambrian siliceous black shales exposed at the Nagarjunasagar dam site, Andhra Pradesh. The low organic carbon content of the shale is apparently a consequence of its formation during Precambrian time when there was little living matter and consequent insufficient organic

matter either to produce a highly reducing environment or to act as adsorption medium, conditions necessary for precipitation and fixation of uranium. The trace amounts of uranium found in pyrite in black shales might have been precipitated in a hydrogen sulphide environment. The absence of sustained reducing conditions during a major part of the deposition of black shales is indicated by the higher content of ferric than ferrous iron.

With the objective of investigating the geochemistry of the waters, soils and rocks of the uranium prospect at Umra (Rajasthan), the concentrations of U, Ni, Co, Cu, V, etc. in the waters, soils and rocks have been determined and their distribution patterns have been interpreted in the light of the geology of the area, the climatic and hydrological conditions prevalent and the geochemical behaviour of the elements concerned in their different environments.

Dating of Galenas. The Cuddapahs were sought to be dated on the basis of the 'model' age of the galena of Zangamrajupalle (Cuddapah district, Andhra Pradesh). Preliminarily, a 'model' age of 780-840 million years was reported. Later when the tailing and pressure scattering corrections were applied on the lines suggested by Russell and Slawson, the 206/204 and 207/204 ratios went up by about 1 and 4 per cent respectively but the 'model' age went up to 1,400-1,470 million years. The revised 'model' age has far reaching implications. Thus, the Cuddapahs may belong to the end phase of the Eastern Ghats cycle (1,600 million years) and the period immediately following as pointed out by Holmes, the two may be related in the same way as the Indo-Gangetic alluvium is related to Himalayas.

The 'model' age of the galena of Rudrammakota, Khammam district, Andhra Pradesh (after the application of the new corrections of Russel and Slawson) favours the correlation of the Pakhals with Cuddapahs rather than with Middle Dharwars, assuming that they are the only possibilities—(Late) C. Mahadevan, V. Aswathanarayana *et al.*, Geology Department, Andhra University, Waltair.

PERSONAL

Appointments

SHRI H.C. GROVER, Junior Scientific Officer, CMERI, Durgapur (May 3, 1963).

SHRI S.N. BHAGI, Junior Scientific Officer, CMERI, Durgapur (May 15, 1963).

SHRI M.A. CHOWDAPPA, Junior Scientific Officer, CMERI, Durgapur (May 25, 1963).

SHRI B.P.S. SARIN, Pool Officer, CMERI, Durgapur (April 16, 1963).

SHRI P.K. JAIN, Pool Officer, CMERI, Durgapur (May 13, 1963).

Promotion

SHRI K.V. SHETTY, Senior Scientific Officer: Grade I, CMERI, Durgapur (May 27, 1963).

* * * *

DR V. SUBRAHMANYAN, Director, CFTRI, Mysore, and DR H.A.B. PARPIA, Chief Defence Coordinator, CSIR, New Delhi have been nominated members of the Defence Food Research Panel constituted by the Ministry of Defence.

SHRI R.S. MEHTA, Director, CPHERI, Nagpur presided over the first meeting of the Public Health Engineering Division of the Institution of Engineers (India) at the 43rd Annual Convention of the Institution of Engineers, held at Bangalore on May 20, 1963. He has been elected chairman of the Division. Shri Mehta is also a member of a special committee set up by the Institution of Engineers (India) for Engineering Education and Engineering Research.

DR. D.S. BHATIA, Assistant Director, CFTRI, Mysore has been appointed convener of the Natural Food Colours Sub-Committee of the Indian Standards Institution.

SHRI N.K.D. CHAUDHURI, Assistant Director, CBRI, Roorkee, has been elected member of the Association for Applied Solar Energy U.S.A.

PATENTS

Filed

87671 : A process for the direct solvent extraction of fresh coconut kernels for recovery of oil and edible meal—B.H. Krishna, V.B. Shanbag, K.G. Ramaswamy & M.V. Rao, CFTRI, Mysore.

88019 : A yarn tension measuring and recording instrument—A. Pande, S.R. Ranganathan & G.S. Ganesan, Shri Ram Institute for Industrial Research, Delhi.

Accepted

77713 : A process for the production of 5-keto-D-gluconic acid—I.J. Babbar, M.C. Srinivasan, H.G. Vartak & V. Jagannathan, NCL, Poona.

77449 : A new surgical suturing instrument—A. P. Jayaraj, CFTRI, Mysore.

Sealed

76415 : Improvement in or relating to the modificatian of aluminium base alloys containing silicon—S.S. Bhatnagar, P. K. Gupte, B. R. Nijhawan & G. G. Nair, NML, Jamshedpur.

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CSIR NEWS

VOL. 13 JUNE 24, 1963 : ASADHA 3, 1885 NO. 12

PROF. KABIR'S PRESS CONFERENCE

Prof. Humayun Kabir, Minister of Scientific Research & Cultural Affairs and Vice-President, CSIR addressed a press conference at the CSIR Secretariat, New Delhi on June 12, 1963. On the questions regarding the Scientists' Pool of CSIR, the Vice-President disclosed that the Government of India have decided that no highly qualified personnel returning to India would be denied the Pool position due to the limitation of a ceiling of 500, and the position would be reviewed every six months.

Prof. Kabir added that out of 7500 scientists and technologists registered in the 'Indians Abroad' Section of the National Register, over 3100 had returned to India. About 1600 persons were selected to the Scientists' Pool since its creation and about 350 are presently working in the Pool. Over 200 candidates have been in the Pool for one year or less and 29 candidates continued to be in the Pool over two years. On the question of regular employment for Pool Scientists, Prof. Kabir said that no preferential treatment was shown to the Pool Officers to circumvent the normal procedures for recruitment.

He expressed gratification at the fact that the percentage of scientists migrating from India was less than that from U.K. and expressed the hope that more Indians would return from abroad.

The Vice-President also said that the National Laboratories had recently undertaken 190 research projects of defence interest. Out of these, work on 21 items had already been completed and most of these items are being prepared on a pilot scale for meeting the Defence requirements.

Dr Zaheer leads Petroleum Team to Frankfurt Congress

Dr S. Husain Zaheer, Director-General, Scientific & Industrial Research left New Delhi on June 15, 1963 to lead a five-member delegation to the Sixth World Petroleum Congress at Frankfurt from June 16 to 29. The other members of the delegation are : Sarvashri R. D. Verma, M.B. Ramakrishna Rao and B.G. Deshpande, senior officers of the Oil & Natural Gas Commission and Maj. Gen. R. A. Loomba, Director-General of Works, Engineer-in-Chief's Branch, Army Headquarters. Shri B.S. Negi of the Oil & Natural Gas Commission is the alternate delegate.

Dr Zaheer will be in France from July 5 to 12, 1963 at the invitation of the French Government and visit the French Institute of Petroleum which has been cooperating with CSIR in setting up the Indian Institute of Petroleum.

Shri Baldev Singh

Shri Baldev Singh, Industrial Liaison and Extension Officer, CSIR, has been appointed Secretary of the Reviewing Committee headed by Dr A. Ramaswamy Mudliar to review the work of CSIR.

Dr L.A. Ramdas

Dr L.A. Ramdas who was Assistant Director and Head of the Heat and Power Division of the National Physical Laboratory, New Delhi for 5½ years and who was subsequently appointed Officer on Special Duty (Technical), CSIR on June 3, 1962 has retired with effect from June 2, 1963.

PERSONAL

Appointments

DR V.D. SEHGAL & SHRI SURINDER SINGH—Senior Scientific Officers : Grade I, NML, Jamshedpur (May 1 & June 10, 1963 respectively).

SHRI V. P. SAINI—Instrument Engineer, NML, Jamshedpur (June 4, 1963).

SHRI H. A. UNVALA—Assistant Director, CSIO, New Delhi (Jan. 21, (1963).

SHRI S. CHATTERJEE—Administrative Officer (Stores & Purchase), CSIO, New Delhi (May 13, 1963).

Transfer

SHRI N. SEN, Junior Scientific Officer, CDRI, Lucknow—Junior Scientific Officer, CSIR Secretariat, New Delhi (June 5, 1963).

Resignation

DR MOHD ABDUL QUADDER—Junior Scientific Officer, NML, Jamshedpur (April 26, 1963).

* * *

DR M. G. KRISHNA, Deputy Director-in-charge, IIP, has been nominated member of the Advisory Council for the Research and Training Institute, Oil & Natural Gas Commission, Dehra Dun.

DR S. K. BARAT, Assistant Director, CLRI, Madras has been nominated member of the Technical Sub-Committee of the Development Council for Leather and Leather Goods Industries.

DR M. S. BHALLA, Senior Scientific Officer, CEERI, Pilani has been nominated member of the Signalling & Telecommunication Research Sub-Committee of the Research, Designs & Standards Organisation, Ministry of Railways, Simla.

SARVASHRI A. RAHMAN, Assistant Director, History of Science Unit, CSIR, New Delhi and M. S. DANDEKAR, Senior Translating & Abstracting Officer, Insdoc, New Delhi participated in the conference on Asian Pacific Information Centres, held at Hong Kong during June 10-15, 1963 under the auspices of the National Academy of Sciences of the United States and the East-West Centre.

SHRI Y. R. PHULL, Senior Scientific Officer : Grade II, CRRI,

(*Contd on p. 4, col. 3*)

B R I E F S

Grants for Fellowships in 1962-63

A grant of about Rs 16.47 lakhs was made by CSIR for fellowships in educational and research institutions during 1962-63. Twenty colleges and research departments of 25 universities besides 28 other organisations were the recepients of grants.

Andhra University received the highest amount (Rs 2.10 lakhs), followed by the Indian Institute of Science, Bangalore (Rs 1.85 lakhs), Delhi University (Rs 1.21 lakhs) and Indian Agricultural Research Institute, New Delhi (Rs 1.14 lakhs).

Statewise, Uttar Pradesh received the largest amount (Rs 4.98 lakhs) followed by Delhi (Rs 2.74 lakhs), Andhra Pradesh (Rs 2.59 lakhs), Mysore (Rs 1.91 lakhs), West Bengal (Rs 1.58 lakhs) and Madras (Rs 1.35 lakhs).

Production of Magnesium Metal

A pilot plant for the production of magnesium metal (from Salem magnesite), a major ingredient in the manufacture of light alloys, is proposed to be set up by the Central Electrochemical Research Institute, Karaikudi.

Laboratory scale experiments have already been successfully carried out at the Institute using fused salt electrolysis technique.

The Government of Madras have sanctioned a sum of Rs 3.2 lakhs for setting up the pilot plant.

CSMCRI Brochure

A 20-page illustrated brochure highlighting the achievements of the Central Salt & Marine Chemicals Research Institute, Bhavnagar, has been brought out. The brochure also lists the completed projects and the processes ready for use by the industry.

Geoscientists of India

Certain important aspects of the utilization of geoscientists in India are discussed in the May 1963 issue of *Technical Manpower*. Two thousand three hundred geoscientists have been registered in the National Register of whom 300 are geophysicists. Nearly 95 per cent of them hold post-graduate degrees and 6 per cent doctorate degrees. About 40 post-graduate geoscientists, some of them holding first class degrees, are included in the unemployment list of the National Register while another 150 are working in non-technical and clerical pursuits. Thus, about 10 per cent of the geoscientists are not properly utilised.

Nearly 30 per cent of the post-graduate geologists and 35 per cent of the geophysicists are engaged in teaching. Thus, only about 1800 post-graduate geo-scientists are available for regular exploration and mapping work. This is too small a number for a country with 1¼ million square miles of area for geological mapping and mineralogical exploration.

The out-turn of post-graduate geologists in India which was about 60 in 1950 had gradually increased nearly 6 times by 1961. As geophysics has been relatively recently introduced as a subject at the post-graduate level in India, the output of geophysicists in 1961 was only 30.

Dr K. S. Chari

Dr K. S. Chari, Assistant Director, Regional Research Laboratory, Hyderabad has been appointed Deputy Director, Central Engineering and Design Unit, CSIR Secretariat, New Delhi. He took charge on June 3, 1963.

After a brilliant scholastic and college career in the Madras University, Dr Chari (b. Feb. 17, 1918) joined the Department of Chemical Engineering, Indian Institute of Science, Bangalore in 1940. He worked as a member of the staff of the Institute for about a year, and later was appointed a Research Assistant under the Board of Scientific & Industrial Research, Hyderabad, where he worked for three years on the manufacturing methods of glue, gelatine and superphosphate from bones and other slaughter materials. He was deputed in 1946 by the Hyderabad State as a State Scholar to the Chemical Engineering Department, College of Technology, Manchester. His thesis on rectification of binary mixtures for the award of Ph.D. degree was adjudged the best of the year and won him a prize. On his return from U. K. in 1949, he joined the Department of Chemical Technology, Osmania University, Hyderabad as Lecturer in Chemical Engineering. He joined the Central Laboratories for Scientific & Industrial Research, Hyderabad in 1953 as a Scientific Officer and was in charge of chemical engineering section. During 1953-56 he organised the chemical engineering and pilot plant section of the Laboratories and initiated a number of research projects. In 1957, he was appointed Assistant Director and placed in charge of the full-fledged Chemical Engineering Division of the Laboratory. He was responsible for the successful development of a number of research projects worked out in the Laboratory. He is the author of about 40 publications in Indian and foreign journals.

Dr Chari is an Associate Member of the Royal Institute of Chemistry, London; an Associate Member of the Institution of Chemical Engineers, London; and a Member of the Indian Institute of Chemical Engineers. He is also member of several technical committees of the Indian Standards Institution.

Electronic Digital Computer Facility

An electronic digital computer (National Elliot 803-B), which the *Hindustan Aircraft Ltd.*, Bangalore, have received recently, is available for use at concessional rates by non-profit institutions devoted to education and research. Several educational and research institutions in the country, including three CSIR organisations viz. CBRI, Roorkee; CRRI, New Delhi; and NAL, Bangalore, have already availed themselves of the facility.

Correction

The names of investigators of the scheme 'Studies in Sweep Distillation' the progress of which is reviewed in Vol. 13, No. 7, page 3 of *CSIR News* should read as: M. SUBRAHMANIAM, R. KUMAR & R.L. DATTA

RESEARCH IN PROGRESS

National Laboratories

NML, JAMSHEDPUR

Pig Iron from Nepal Iron Ore and Limestone—Extensive smelting trials were conducted with iron ore and limestone from Nepal in the low shaft furnace pilot plant at the request of the Government of Nepal. Though iron ore deposits and limestone are found in Nepal, there are no coal deposits. Hence, the smelting trials were made using nut coke or charcoal as surplus nut coke from the integrated iron and steel plants of India may be available and charcoal can be produced by non-destructive distillation-cum-carbonisation of wood available in Nepal. It has been inferred from the successful smelting trials that a 50-ton per day small blast furnace or low shaft furnace can be installed at Hitaura in Nepal for utilising the local iron ore.

CDRI, LUCKNOW

Studies on *Entamoeba histolytica* —A simple and reliable method of obtaining viable and sterile cysts of *E. histolytica* from human faeces has been developed. It consists in treating faecal matter containing cysts with 2.0 per cent hydrochloric acid for 48 hr. The treatment renders the microflora completely sterile leaving 60-66 per cent of the treated cysts viable. Monobacterial cultures from these cysts have been made on *Aerobacter* sp., *Staphylococcus albus* and *Pseudomonas pyocyanea* in modified Boeck and Drbohlav medium containing rice starch.

Sponsored Research

Cyto-taxonomic Revision of Indian Commelinaceae—As the orthodox method of taxonomy, based on herbarium material only, carried out on the family Commelinaceae is not completely satisfactory in respect of the splitting of various genera and species, investigations were undertaken to apply orthodox methods of taxonomy supplemented by study of living material practically of all the species both in the field and under cultivation and also by the study of chromosome numbers and other cytological data.

Detailed study of the various species of the family in the field has been made in the eastern, southern and central parts of India where 95 per cent of the species are found. Elaborate field notes on the habit and habitat of the various species have been made and a large number of complete specimens have been collected both as herbarium specimens and for cultivation in the garden. The behaviour of these various species both under field condition and cultivation has been compared and special attention has been devoted to the deliquescent flower characters which are wrongly recorded in certain cases by earlier workers. Besides, more than 10,000 herbarium specimens of the family from all important Indian herbaria and several important type specimens and photos of types from the herbaria of U.K. and the Continent have been carefully scrutinised and properly annotated. The study has revealed that 73 species under 10 genera thrive in India and that over 60 species have been cultivated under uniform conditions. Many species such as *Commelina paludosa* Bl., *C. paleata* Hassk., *C. kurzii* C.B.Cl., *C. suffruticosa* Bl., *C. ensifolia* Br., *C. virginica* Linn., *Murdannia loriforme* (Hassk.) Rolla et Kammathy, *M. simplex* (Vahl) Brenan, *M. gigantea* (Vahl) Bruckn., *M. semiteres* (Dalz.) Santapau, *M. juncoides* (Wt.) Rolla et Kammathy, *Zygomanes axillaris* (Linn.) Schult, f., *Z. cucullata* (Roth) Rolla et Kammathy have been separated from their often confused allies.

Chromosome numbers of 53 species have been determined afresh from various populations from fixings made in the field as well as after cultivation in the garden. Sixteen out of 18 species of *Commelina* showed euploidy with $x=15$; three species of *Pollia* showed uniform number $n=16$; *Cyanotis* (*s.s*) showed $n=12$ and its multiple in a few species whereas the only 2 species of *Zygomanes* previously included under *Cyanotis* (*s.l.*) showed $n=10$; in *Aneilema* $n=7$ is common whereas in *Murdannia* euploidy with $n=6$, 10 though common, a number of other species showed aneuploidy of a very complex nature.

The chromosome number and other cytological data have helped confirmation of the taxonomical findings in the case of *Commelina paludosa* and *C. kurzii*; *C. clavata* and *C. diffusa*; *C. ensifolia* and *C. undulata*; *Murdannia loriforme* and *M. simplex*, etc. Separation of *Murdannia* and *Aneilema*, and that of *Cyanotis* and *Zygomanes* have now been confirmed by cytological evidence. On the contrary uniform chromosome number in species of *Pollia* does not support the separation of *Pollia* and *Aclisia* as considered by a few earlier workers, particularly Bruckner and this view is further confirmed by morphological characters also.

The study has shown that the species of the genus *Cyanotis* (*s l.*) form an unnatural assemblage and each section as proposed by C.B. Clarke under the genus requires a separate generic status; *Belosynapsis* Hassk. should be recognised as a distinct genus; Ochraeflora section should be separated into a distinct genus, *Zygomanes* Saliab. and the two species—*Cyanotis axillaris* and *C. cucullata*—should be included in *Zygomanes* genus.

The study has led to new interpretations over the range of distribution of various species and nomenclature of various species. Seven new combinations, 3 new names and many changes have been found necessary according to the international code of technical nomenclature.

Detailed description, diagrams of complete plant, flowers and fruit characters of various species, and maps showing distribution have been prepared. Black and white photographs and kodachromes of various interesting herbarium specimens including types, plants in their natural habitat, fruits and seeds have been made as also slides showing the chromosome number of each species—R. V. KAMMATHY & SESHAGIRI RAO ROLLA, Botanical Survey of India, Poona.

Morphological and Embryological Studies in the Santalales—The morphology and embryology of several members of the Santalales have been studied. This order comprises two sub-orders: Santalineae and Loranthineae. The Santalineae included six families (Olacaceae, Opiliaceae, Octoknemataceae, Grubbiaceae, Santalaceae and Myzodendraceae), while the Loranthineae comprise two families (Loranthaceae and Viscaceae).

The investigations include the study of floral morphology, structure of placenta, and development of gametophytes, endosperm, embryo, and seed of *Amylotheca* (Loranthaceae); *Buckleya*, *Exocarpus*, *Mida*, *Osyris*, *Quinchamalium*, *Santalum*, and *Thesium* (Santalaceae); *Olax* and *Strombosia* (Olacaceae). The systematic position of some genera, and inter-relationships of the families have also been checked. The main features of the plants are as follow.

In *Amylotheca* the ovary is 3- or 4-chambered at the base, the mamelon also is 3- or 4-lobed, the hypostase is composed of thick-walled cells, the viscid layer is confined only to the base of the fruit, and the embryo shows finger-like projections at the radicular end and two free cotyledons.

Paliwal's observation on the occurrence of megaspore haustoria in *Thesium* have not been confirmed. Unlike other santalaceous genera in which the embryo sac is of the Polygonum type, in *Buckleya* the embryo sac appears to be of the Allium type. In *Qunichamalium* the tips of synergids form extensive haustoria which are the longest in angiosperms, and the antipodal chamber also gives rise to an aggressive haustorium. Paliwal's observation that the tips of synergids form haustoria in *Santalum* has been found to be incorrect. In *Mida* the development of the endosperm is rather unusual since the secondary haustoria originate from both the micropylar and chalazal endosperm chambers. The developmemt of a composite endosperm in *Santalum* has been contradicted and it has been found that the endosperm is formed from a single embryo sac. The development of secondary endosperm haustoria in *Thesium* could not also be confirmed.

The occurrence of polyembryony due to the proliferation of the suspensor has been recorded in *Buckleya* and *Exocarpus*. One of the cotyledons of the mature embryo of *Buckleya* is smaller than the other. The parenchymatous ovary wall does not differentiate into the parenchymatous epicarp, stony mesocarp, and an ephemeral parenchymatous endocarp as in the Santalaceae.

Studies on *Olax* revealed that the pollen grains are shed at the 3-celled and not 2-celled stage, a 6-nucleate stage precedes the 8-nucleate gametophyte, and the endosperm is Helobial with a tetranucleate chalazal haustorium. Similarly, observations on *Strombosia ceylanica* show that the inferior ovary is unilocular above (not throughout) and pentalocular below, the ovules are anatropous and not circinotropous, and the chalazal end of the embryo sac does not show any unusual growth.

The embryological data have proved very useful in taxonomic assignments. It has been suggested that of the six families (Olacaceae, Opiliaceae, Octoknemataceae, Grubbiaceae, Santalaceae and Myzodendraceae) under the sub-order Santalineae, the Opiliaceae should be included as a tribe Opilieae under the family Santalaceae, and the Octoknemataceae may be merged with the Olacaceae. Of the sub-order Loranthineae both the sub-families, Loranthoideae and Viscoideae, should be upgraded to a family rank. Thus, the sub-order Santalineae should comprise four families (Olacaceae, Grubbiaceae, Santalaceae and Myzodendraceae), and the sub-order Loranthineae should include two families (Viscaceae and Loranthaceae).

The extensive synergid haustoria in *Quinchamalium* and bisporic development of embryo sac in *Buckleya* are unique features in the Santalaceae—B.M. JOHRI, *et al.*, Botany Department, Delhi University, Delhi.

We record with deep regret the demise of Dr S. A. Saletore, Deputy Director, Regional Research Laboratory, Assam on June 6, 1963 at Secunderabad.

PATENTS

Filed

87992 : *Direct preparation of wax esters by fatty acids hydrogenolysis*—A.J. Pantulu, K.T. Achaya, G.S. Sidhu & S.H. Zaheer, RRL, Hyderabad.

Accepted

78779 : *Formation of lustrous film on glass*—Atma Ram, S.N. Prasad, K.P. Srivastava & V.K. Vaish, CGCRI, Calcutta.

Sealed

62/2435 SOUTH AFRICA : *Substituted β-ph nethylamines, process therefor and compositions and methods for effecting diuretic therapy*—P. B. Sattur, G.S. Sidhu, S.L. Hasan & S.H. Zaheer, RRL, Hyderabad.

Processes Leased Out

Processes for producing hydrated calcium silicate and free flowing table salt, developed at the Central Salt & Marine Chemicals Research Institute, Bhavnagar, have been leased out for commercial exploitation to the firms, *Plasti Chemicals Ltd.*, Bombay and *Shamalsha Girdhari and Co.*, Bombay, respectively.

PERSONAL

(*Contd from p. 1, col. 3*)

New Delhi resumed duties on April 23, 1963 after the completion of his training in prestressed concrete at Centre de Hantes Etudes du Beton, beton Anme et beton Preconstraint, Paris and other organisations in France.

SHRI V. S. SAMPATH, Senior Scientific Officer : Grade II, NML, Jamshedpur left for Australia for a six-month training in extractive metallurgical techniques as applied to non-ferrous metals.

SHRI N. DHANANJAYAN, Junior Scientific Officer, NML, Jamshedpur has been declared qualified for the M. Sc degree of the Madras University for his thesis : *Studies on the electro-deposition of manganese from aqueous solution of its salts.*

Printed and published by Shri B.N. Sastri, Council of Scientific & Industrial Research, New Delhi at Asia Press, Delhi-6

R.N. 4212/5

CSIR NEWS

VOL. 13 JULY 8, 1963 : ASADHA 17, 1885 NO. 13

DR ZAHEER TO HEAD SCIENTISTS' DELEGATION TO UAR

A five-member delegation of scientists headed by Dr S. Husain Zaheer, Director-General of Scientific & Industrial Research will visit UAR from July 13 to 24, 1963 under the Indo-UAR Cultural Exchange Programme. The other members of the delegation are: Prof. S.N. Bose, F.R.S., National Professor; Dr S.H. Zaidi, Assistant Director, Central Drug Research Institute, Lucknow; Dr K.S. Chari, Deputy Director, Central Engineering & Design Unit, CSIR, New Delhi; and Dr Gyan Mohan, Senior Scientific Officer: Grade I, National Physical Laboratory, New Delhi. The delegation will discuss possibilities of closer collaboration between the two countries in scientific matters.

NATIONAL REGISTER

A total revision of the National Register of Scientific & Technical Personnel is being undertaken to make it up-to-date. The requisite forms for registration have been published in various newspapers which can be conveniently cut out for use by qualified persons, namely, degree holders in science or medicine and degree or diploma holders in engineering or technology.

The total number of registrants in the National Register is at present 2.5 lakhs. Of these, 42,000 are post-graduate scientists, 6,000 medical specialists and 59,000 graduate engineers and technologists, 74,000 graduates in science, 16,000 graduates in medicine and 52,000 diploma holders in engineering and technology.

Besides, in a separate roster of the National Register for overseas-trained personnel, about 8,000 scientists, engineers, technologists and doctors have enrolled themselves.

The number of potential registrants is estimated at about four and a half lakhs, consisting of 50,000 post-graduate scientists, 1,80,000 science graduates, 1,80,000 engineers and technologists (degree and diploma holders), and 40,000 medical graduates.

Statistics of Research Papers

Five hundred and eighteen research papers were published by the national laboratories and under sponsored research projects during the six-month period, October 1962-March 1963. Of these, 330 papers were contributed by the former and 188 papers emanated from the latter.

Of the 518 papers, (i) 126 papers (66 from laboratories and 60 from research schemes) were published in 72 foreign (U.S.A., U.K., Germany and Japan) periodicals; (ii) 392 papers (264 from laboratories and 128 from schemes) were published in Indian periodicals. The national laboratories published 91 papers in their own bulletins, 67 in the research periodicals brought out by Publications & Information Directorate and the rest in other Indian journals.

Laboratory-wise, the Central Food Technological Research Institute, Mysore, contributed the maximum number of papers (36), all of which appeared in Indian periodicals. The National Chemical Laboratory, Poona, contributed 34 papers of which 19 were published in foreign journals.

The statistics are based on the abstracts of research papers received for publication in the April and July 1963 issues of the Journal of Scientific & Industrial Research.

MEETING

A meeting of the Electrical & Mechanical Engineering Research Committee will be held on July 31, 1963 at 10.30 a.m. in the Planning Commission (Room No. 125), Yojana Bhavan, New Delhi. Prof. M.S. Thacker, Member of Planning Commission, and Chairman of the Committee, will preside.

PERSONAL

Promotions

SHRI R. RADHAKRISHNAN, Electrical Engineer—Electrical and Mechanical Engineer, CECRI, Karaikudi (June 1, 1963).

SARVASHRI S. GURUVIAH & S.R. RAJAGOPALAN, Senior Scientific Assistants—Junior Scientific Officers, CECRI, Karaikudi (June 10 & June 13, 1963 respectively).

Appointments

DR R.L. SETH—Senior Scientific Officer: Grade II, CECRI, Karaikudi (June 17, 1963).

SHRI K. SANKARAN—Accounts Officer, NAL, Bangalore (March 7, 1963).

Transfer

SHRI A.W. de SOUZA, Administrative Officer, RRL, Jorhat—Administrative Officer, NAL, Bangalore (June 19, 1963).

* * *

SHRI C. S. RANGAN, Senior Scientific Officer: Grade I, NAL, Bangalore, resumed duties on May 23, 1963 after nine months' training in aeronautical establishments in U.S.A., Canada, U.K. and the Continent under the Fellowship Scheme of the U.N. Special Fund Aid Programme.

SHRI K. BALAKRISHNAN, Senior Scientific Assistant, CECRI, Karai-

(Contd on p. 4, col. 3)

NEW RESEARCH SCHEMES SANCTIONED

On the recommendation of its Advisory Board, the Governing Body of the Council have sanctioned the following research schemes for 1963-64.

Physics

1. *Spectroscopic study of X-rays emitted by gases and vapours subjected to high voltage-high frequency discharges*—Dr B G. Gokhale, Lucknow University, Lucknow.

2. *Crystal structure study of crystal imperfections*—Dr R.K. Sen, Indian Association for the Cultivation of Science, Calcutta.

3. *Infrared and electronic spectra of free radicals*—Shri D.R. Rao. Indian Institute of Technology, Kanpur.

4. *Investigation of crystal structures of organic crystals by X-ray diffraction*—Shri Surendra Nath Srivastava, Allahabad University, Allahabad.

5. *Investigations in the soft X-ray region by concave grating vacuum spectrograph*—Dr B.K. Agarwal, Allahabad University, Allahabad.

6. *Spectroscopic study of meteors*—Dr M. Srirama Rao, Andhra University, Waltair.

7. *Studies on Rydberg transitions in diatomic molecular spectra*—Dr P.B.V. Harnath, Andhra University College, Waltair.

8. *Infrared and electronic spectra of ferro-electric systems*—Dr Putcha Venkateswarlu, Indian Institute of Technology, Kanpur.

9. *Electric and magnetic properties of liquid crystals*—Shri Challa Radha Krishna Murty, J.V.D. College of Science & Technology, Andhra University, Waltair.

10. *Some aspects of design of achromatic and direct vision prism : Extension of the same to lenses*—Shri P. Rajagopala Rao, Shri Govindram Seksaria Technological Institute. Indore.

11. *Ultrasonic investigations in melts and solutions*—Dr K. Subba Rao, Andhra University College, Waltair.

12. *Magneto-hydrodynamics and its applications*—Shri S.P. Talwar, Delhi University, Delhi.

13. *Transport properties in solids*—Shri Bal Krishna Agrawal, Allahabad University, Allahabad.

Radio

14. *Study of frequency power spectrum of lightning discharge*—Prof. S.R. Khastgir, College of Science & Technology, Calcutta University, Calcutta.

15. *Investigation of ionospheric drift by spaced receiver technique at Trivandrum*--The Research Engineer, All India Radio, New Delhi.

16. *Measurement of atmospheric noise in the frequency band 20-100 kc/s.*— Prof. S.V.C. Aiya, Indian Institute of Science, Bangalore.

Chemical

17. *Physico-chemical studies on the role of adsorption and complex formation during the interaction of organic compounds with gels*—Dr W.U. Malik, Muslim University, Aligarh.

18. *Extension of studies on solutions of high dielectric constants*--Dr Ram Gopal, Lucknow University, Lucknow.

19. *Kinetics and mechanism of oxidation of organic compounds by transition metal ions*—Dr G.V. Bakore, Jodhpur University, Jodhpur.

20. *Design and operation of new and efficient electrolytic cells using fluid-solid technique*—Dr G.J.V. Jagannadharaju, Andhra University, Waltair.

21. *Dielectric behaviour and losses of polar molecules in solution with special reference to ion-ion pair stability*—Dr Balkrishna, Allahabad University, Allahabad.

22. *Size of the orbital contribution to the magnetic moment spectra and structure of inorganic complexes*-Dr H.L. Nigam, Allahabad University, Allahabad.

23. *Thermal decomposition of irradiated nitrates*—Dr S.R. Mohanty, Banaras Hindu University, Varanasi.

24. *Research unit on coordination chemistry*—Dr A.K. Dey, Allahabad University, Allahabad.

25. *A study of the chelate compounds of trivalent indium and thallium*—Dr R.C. Aggarwal, Lucknow University, Lucknow.

26. *A study of the coordination compounds of metallic tetrafluorides of IV group with hydrazine*—Dr R.C. Aggarwal, Lucknow University, Lucknow.

27. *Separation and determination of platinum metals*—Dr R.P. Agarwala, Allahabad University, Allahabad.

28. *Organic compounds and trialkylsilyloxy derivatives of V and VI group elements*—Dr R.N. Kapoor, Jodhpur University, Jodhpur.

29. *The chemistry of surface compounds of carbon with oxygen, halogens, nitrogen and sulphur*—Dr B.R. Puri, Panjab University, Chandigarh.

30. *Studies in dieneamines : Exploratory work involving use of eneamines of unsaturated carbonyl compounds as potential synthetic intermediates*—Dr J.S. Walia, Banaras Hindu University, Varanasi.

31. *Studies on emulsion polymerisation and copolymerisation of styrene, butadiene, acrylonitrilo and alkyl acrylates in presence of reinforcing agents such as carbon black and shellac*-Dr B. Mangaraj, Indian Institute of Technology, Kharagpur.

32. *Fundamental studies in heterocyclics containing nitrogen and sulphur*—Dr K.S. Narang, Panjab University, Chandigarh.

33. *Synthesis of steroid analogues and natural steroids*—Dr D.K. Banerjee, Indian Institute of Science, Bangalore.

34. *Heterocyclic compounds for use as photographic sensitisers and for structure-spectra correlation*—Dr M.K. Rout, Ravenshaw College, Cuttack.

35. *Investigations on some plants of Euphorbiaceae family with special interest in the elucidation of structures of compounds whose structures are not known*—Dr P. Sen Gupta, Kalyani University, West Bengal.

36. *Chemical investigation of Atlantia species (Family Rutaceae)*—Dr M.K. Rout, Ravenshaw College, Cuttack.

37. *Synthesis and biochemical studies on analogues of nucleic acid bases*—Dr D. Sen, University College of Science & Technology, Calcutta.

38. *Studies on the biosynthesis of streptomycin and neomycin*—Dr S.K. Majumdar, University College of Science & Technology, Calcutta.

39. *Metal nutrition in relation to enzyme biosynthesis*—Dr K.K. Tewari, Lucknow University Lucknow.

40. *A proposal for the school of research on cellulose*—Dr V.B. Chipalkatti, Shri Ram Institute for Industrial Research, Delhi.

(*to be continued*)

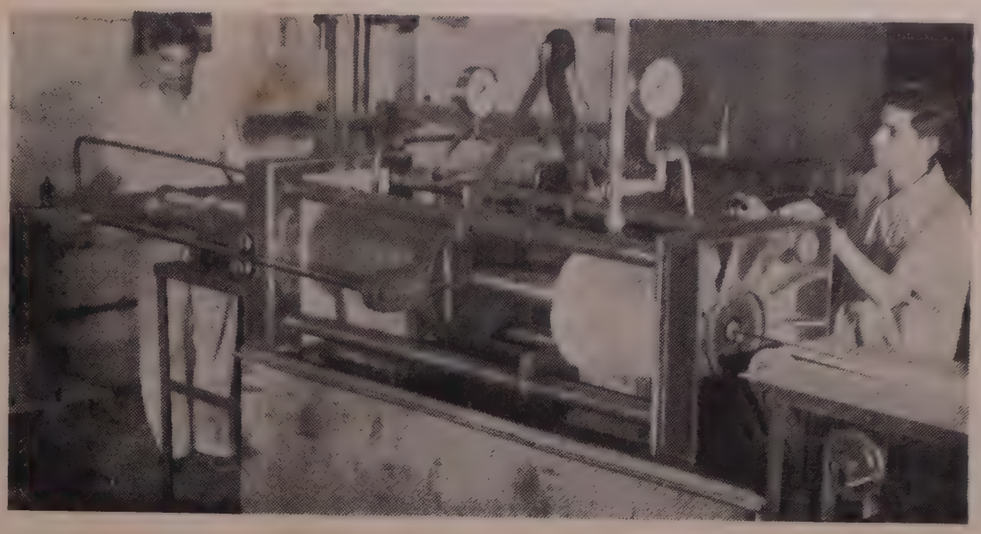
RESEARCH IN PROGRESS

National Laboratories

NPL, NEW DELHI

Extrusion Press—A 40-ton hydraulic extrusion press has been designed and built for the extrusion of carbon rods and tubes of various diameters. The extrusion speed varies from 10 to 15 ft/min. depending upon the size of the rod extruded. About 1500 pairs of high intensity carbon rods, used for projecting pictures in theatres, can be extruded in 8 hr.

Searchlight carbons of 16 mm. and 18 mm. diam. have also been extruded on this press—G.D. JOGLEKAR.



NPL, New Delhi—Extrusion Press designed and fabricated at the Laboratory

CFRI, JEALGORA

Fluidized Technique in Gas Purification—The novel fluidized bed technique has been applied for the removal of hydrogen sulphide from coke oven gas, using an iron oxide catalyst developed at the Institute. The study has led to the following conclusions : (i) for a definite quantity of iron oxide mass, the capacity of the fluidized bed purification unit is much higher (nearly 9 to 10 times) than that of a fixed bed purifier ; (ii) the optimum particle size of the catalyst should be of the order of 85 ± 120 B.S.S. ; (iii) a space velocity, i.e. volume of gas to be purified/volume of catalyst/hr, of 850-1000 gives the best result; and (vi) purification is most effective when the process of introducing the fresh catalyst and removing the spent one is continuous—R.K. CHAKRAVARTI, S. BANERJEE, N.G. BASAK & A. LAHIRI.

CDRI, LUCKNOW

Antitesticular Effect of Metallic and Rare Earth Salts—The effect of 42 water-soluble salts of certain metals and rare earths on testis was investigated in rats and mice. In general, a single intratesticular injection caused varying degrees of degeneration of the seminiferous epithelium but not always of the interstitium. Thirty-five salts exerted antitesticular effects. A single subcutaneous injection was ineffective but continuous administration by the same route caused selective spermatogenic arrest with nine salts. Some of the salts caused azoospermia; others immobilized residual spermatozoa in the ductus deferens by separation of head and tail.

RRL, JAMMU

Monicarmycin—A new polyene antifungal antibiotic, monicarmycin, has been isolated from *Streptomyces monica*. The antibiotic is very active against *Candida albicans*, *C. tropicalis*, *Histoplasma capsulatum*, *Trichophytum violaceum*, *T. rubrum*, *Blastomyces dermatitidis* and *Epidermophytum floccosum*.

Sponsored Research

Chemical and Biochemical Studies on Heated Edible Oils—The effect of heating edible oils commonly used in India, viz. vanaspati, peanut oil, mustard oil, sesame oil and linseed oil on their nutritional value has been investigated. The main conclusions of the study are as follow. Heated vanaspati, peanut oil, mustard oil and sesame oil do not produce any harmful nutritional effects or growth retardation to any significant degree while heated linseed oil produces distinct growth retardation. Heat-decomposed peroxidised polyunsaturated rich oils contain toxic growth-retarding factors which are not polymeric in nature. The level of erucic acid in an oil must be very high (70-80 per cent) to make such oils nutritionally less efficient and in mustard oil, it is not so high as to bring about any marked untoward effect on growth and nutrition—S.C. NIYOGI & D. GANGULY, Applied Chemistry Department, University College of Science & Technology, Calcutta.

Research Papers

P.K. MALHOTRA & R. PARSHAD (NPL, New Delhi)—Novel coincidence technique for transistor decade counters. *Electronics*, **36** (1963), 71.

K.S. VISWANATHAN & N. RAJAPPA (NAL, Bangalore)—Close equational satellites of the moon. *Proc. Indian Acad. Sci.*, **57A** (1963), 201.

T. R. FOLSOM, G. J. MOHANRAO, J.M. Betz & W.F. Garber (CPHERI, Nagpur)—A study on certain radioactive isotopes in selected waste water treatment plants. *J. Water Pollution Control Fed.*, **35** (1963), 304.

G. J. MOHANRAO & T. R. FOLSOM (CPHERI, Nagpur)—Gamma ray spectrometric determination of low concentrations of radioactive caesium in sea water by a nickel ferrocyanide method. *Analyst*, **88** (1963), 105.

R. L. MAKOL (CBRI, Roorkee)—A simple automatic control for measuring pore water pressures in soils. *J. Indian nat. Soc. Soil Mech. Found Engng*, **2** (1) 1963), 6.

S. KUMAR, R. SEN & B. C. SINHA (CGCRI, Calcutta)—Volumetric estimation of silica. *Trans. Indian ceram. Soc.*, **22** (1963), 22.

C.G. BALACHANDRAN & P.S. BHANDARI (CBRI, Roorkee)—Sound absorption properties of porous materials. *Indian J. pure appl. Phys.*, **1** 1963), 152.

PERSONAL

(*Contd from p. 1, col. 3*)

kudi resumed duty on May 25, 1963 on completion of training under a West German scholarship in the field of electrochemistry.

SHRI R.S. MEHTA, Director, CPHERI, Nagpur, has been nominated a member of the Regional Committee for investigation of the problem of pollution of rivers and streams by industrial effluents and trade wastes, constituted by the Maharashtra Government.

DR AMARJIT SINGH, Director, CEERI, Pilani, has been nominated (in place of Dr D.L. Subrahmanyan, Assistant Director) Technical Representative of the Ministry of Scientific Research & Cultural Affairs on the Radio & Cables Board, Ministry of Transport & Communication.

SHRI K. SREENIVASAN, Director, South India Textile Research Association, Coimbatore, has been nominated Chairman of the Reviewing Committee of the Government of India for the Introduction of Metric System in Textile Industry. He has also been nominated member of the Yarn Export Committee constituted to consider various measures for increasing export of cotton yarn.

DR M.G. KRISHNA, Deputy Director-in-charge, IIP, has been nominated *ex officio* member of the Indian National Committee of the World Petroleum Congress.

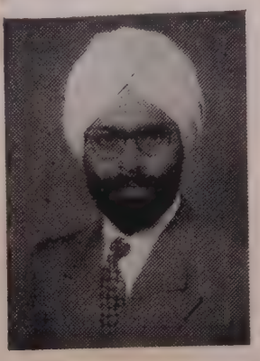
DR D.S. DATAR, Deputy Director-in-charge, CSMCRI, Bhavnagar, has been nominated a member of the Alkalies & Chlorine Sectional Committee and Panel for Salt & Marine Products of the Indian Standards Institution.

DR K.S. CHARI, Deputy Director, Central Design and Engineering Unit, CSIR, New Delhi, has been nominated a member of the Governing Body of the Shri Ram Institute for Industrial Research, Delhi.

DR M. SWAMINATHAN, Assistant Director, CFTRI, Mysore, has been nominated member of the *ad hoc* Committee for working out details for teaching Human Nutrition in Agricultural Universities and Colleges of the Ministry of Food & Agriculture.

Dr Amarjit Singh

Dr Amarjit Singh joined the Central Electronics Engineering Research Institute, Pilani on May 9, 1963 as Director. After his early education at Randhir High School and Randhir College, Kapurthala, he studied at Government College and Sikh National College, Lahore and obtained his M. Sc. degree in 1945. The same year he was awarded a Government of India scholarship for studies overseas. He joined the Ohio State University and obtained his Master of Engineering Science and later Harvard University wherefrom he took his Ph. D. in 1949. During his academic career he was a recipient of several awards including the Gordon Mckay Scholarship at Harvard University.



On his return to India he was appointed lecturer in Radio Physics at the Delhi University, where he took classes in Electronics and History of Science. He joined the National Physical Laboratory, New Delhi in 1953 heading the project of Microwave Tubes. In 1957 he was transferred to the Central Electronics Engineering Research Institute, Pilani as Assistant Director. At both these places he was responsible for setting up facilities for fabrication of vacuum tubes, particularly microwave tubes. In 1959 he was appointed Assistant Director-in-charge of the Institute and promoted to the rank of Deputy Director in 1961. He proceeded to U.S.A. in 1962 as a Visiting Scientist at the Electronics Physics Laboratory of the University of Michigan and the Semi-conductor Device Laboratory of the Bell Telephone Laboratories. He availed himself of the opportunity to visit many other research laboratories and factories and participated in a number of conferences. On his return to India in May 1963 in response to a call arising from the national emergency he took charge of the Central Electronics Engineering Research Institute as Director.

Dr Amarjit Singh is a senior Member of the Institute of Electrical and Electronic Engineers, New York and a member of *Eta Kappa Nu*. He is the author of several research papers in Indian and foreign journals.

Dr Nitya Anand

Dr Nitya Anand, Senior Scientific Officer : Grade I, Central Drug Research Institute, Lucknow, has been appointed on promotion, Assistant Director with effect from June 21, 1963.

Born in Lyallpur (W. Punjab) on January 1, 1925, Shri Nitya Anand had his high school and university education in the Government College, Lahore and St Stephen's College, Delhi, respectively. He obtained his M.Sc. degree from the Delhi University in 1945 standing first in the order of merit. He took his post-graduate training in the Department of Chemical Technology, Bombay University, under Dr K. Venkataraman and worked on the synthesis of chromones, xanthones and hydroxycoumarins and obtained the Ph. D. degree of the University in 1948. Later, he joined the University Chemical Laboratory, Cambridge, and worked on the synthesis of nucleosides and some nucleotide coenzymes under Lord Todd and obtained the Ph. D. degree of Cambridge University in 1950.

After his return from England, Dr Nitya Anand joined CDRI, Lucknow, in 1951, as Junior Scientific Officer. He was promoted as Senior Scientific Officer : Grade II in 1952 and as Senior Scientific Officer: Grade I in 1957.

As a member of the Indian Pharmaceutical Industry delegation, Dr Nitya Anand visited U.S.S.R., Germany, Switzerland and Italy in 1956.

Under a Rockefeller Foundation Fellowship in 1958, Dr Nitya Anand worked on the mode of action of streptomycin in the Department of Bacteriology and Immunology, Harvard Medical School, Boston, U.S.A.

Dr Nitya Anand has published about sixty research papers in the field of mycobacterial infections, amoebiasis, psychotropic disorders, viral diseases, synthesis of polypeptides and mode of action of drugs.

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CSIR NEWS

VOL. 13 JULY 22, 1963 : ASADHA 31, 1885 NO. 14

U. S. WEATHER BUREAU PLANES PARTICIPATE IN INTERNATIONAL INDIAN OCEAN EXPEDITION

Four research aircraft of the U.S. Weather Bureau Research Flight Facility and one of the Woods-Hole Institute of Oceanography have been making sorties for the last two months over the Indian Ocean, Arabian Sea and the Bay of Bengal on the basis of an agreement between the Governments of India and of U.S.A. The research aircraft are highly instrumented for measuring pressure, temperature, humidity, radiation, winds, etc. and are equipped with radar and photographic equipment for getting details of different types of clouds and detection of rain in the clouds, and are oriented for automatic processing with electronic computers. The meteorologists in the International Meteorological Centre at Bombay jointly sponsored by the India Meteorological Department and Council of Scientific & Industrial Research with U.N. Special Fund Assistance, and the officers of the Indian Air Force participated along with the U.S. meteorologists in a series of observations from Bombay, where these aircraft have been based. They have carried out in all 67 scientific missions and twice penetrated the tropical cyclone area. The data collected during these two months are expected to help meteorologists to probe better into the mysteries of the monsoons which play a vital part in the economics of the countries bordering the Indian Ocean.

One of these aircraft, a D.C.-6, arrived in Delhi on July 14 for carrying out a few demonstration flights. The next day morning this aircraft made a few flights from the Palam Airport, carrying the Prime Minister, Minister for Scientific Research & Cultural Affairs Prof. Humayun Kabir, Defence Minister Shri Y B. Chavan, Minister for Transport and Communications Shri Jagjivan Ram, senior service officers, Government officials and scientists. Prof. C.S. Ramage, Scientific Director of the U.S. Programme in Meteorology at the International Meteorological Centre, Bombay, explained the various aspects of the meteorological programme and the objectives of the weather flights.

D.C.-6 Research Aircraft fully equipped with radar, gust probe and other meteorological sensors including Doppler navigation and wind computing equipment; nominal range, 3000 miles; operating altitudes, 1500-23,000 ft.

Swiss Experts to CSIO

Dr R.M. Dolby and Mr M. Winsnes, Swiss experts in electronics and electromechanical instruments respectively joined the Central Scientific Instruments Organization on April 9, 1963 and May 13, 1963 respectively under the U.N. Special Fund Project.

Shri A. J. Kidwai

Shri A. J. Kidwai, Secretary, CSIR, left for U.K. on July 10, 1963 to attend a course in Scientific Management at Gonville and Caius College, Cambridge, under the Colombo Plan. He will return on August 15, 1963.

The Vice-President, CSIR, has approved that during the absence of the Secretary, Shri A. K.Mustafy, Officer on Special Duty, CSIR Secretariat, will officiate as Secretary.

PERSONAL

Appointment

SHRI R.N. CHAKRABARTY—Senior Scientific Officer : Grade I (Officer-in-charge, Kanpur Field Centre), CPHERI, Nagpur (Feb. 12, 1963).

Promotions

SHRI P. N. MALHOTRA, Senior Accountant, CBRI, Roorkee—Accounts Officer, CSIO, New Delhi (July 8, 1963).

SHRI KRISHAN KANT—Section Officer, CSMCRI, Bhavnagar (June 17, 1963).

Transfer

SHRI S. DAS, GUPTA, Administrative Officer, IIBEM, Calcutta—Administrative Officer, CECRI, Karaikudi (June 26, 1963).

(Contd on p. 4 col. 1)

NEW RESEARCH SCHEMES SANCTIONED

The following is the second list of research schemes sanctioned by the Governing Body on the recommendation of its Advisory Body for the year 1963-64. The first list appeared in the July 8, 1963 issue of *CSIR News*.

Chemistry

41. *Electron transfer reactions: Analytical and mechanistic studies*—Dr J.P. Tandon, Gorakhpur University, Gorakhpur.

42. *Kinetics of ionization process in non-aqueous solvents*—Dr M.N. Das, Jadavpur University, Calcutta,

43. *Activity coefficients and anodic phenomena in molten chlorides*—Dr H.C. Gaur, Delhi University, Delhi.

44. *Dissociation constants of some organic bases containing sulphur*—Dr Sp. Shanmuganathan, Pachaiyappa's College, Madras.

45. *Rheological and physicochemical studies on metal organo colloidal systems*—Dr S.P. Mushran, Allahabad University, Allahabad.

46. *A study of copper amalgam electrode*—Dr T.H. Venkata Setty, Central College, Bangalore.

47. *Study of atoms and molecules by wave mechanical methods*—Shri Md Asgar Ali, Presidency College, Calcutta.

48. *Momentum and heat transfer studies in countercurrent solid-gas fluidized systems with and without finned surfaces*—Dr R. Satapathy, Shri Ram Institute for Industrial Research, Delhi.

49. *Investigations on reversible and irreversible electrode process in mercaptans, disulphides and other media of biological importance*—Dr R.C. Kapoor, Allahabad University, Allahabad.

50. *Oxidation states of chromium*—Dr S.V. Anantakrishnan, Madras Christian College, Tambaram (Madras State).

51. *Preparation of anhydrous halides of some lanthanides and transition metal elements using organic media*—Shri I.P. Saraswat, Roorkee University, Roorkee.

52. *Bromine and iodine cations*—Dr I.M. Mathai. Madras Christian College, Tambaram (Madras State).

53. *A research school of inorganic polymers*—Prof. R. C. Mehrotra, Rajasthan University, Jaipur.

54. *Ion-exchange studies (Application for a research unit: Ion-exchange studies of some metals)*—Dr Anil Kumar De, Jadavpur University, Calcutta.

55. *Application of gas chromatography to (i) analysis of fatty acid and glyceride contents of some fats and oils of economic importance, and (ii) separation of the important amino acids from their mixtures*—Shri Jyotirmoy Dutta, Bose Institute, Calcutta.

56. *Metal complexes of hydroxamic acid and their analytical applications*—Dr S.G. Tandon, Government Science College, Jabalpur.

57. *Isomerisation of optically active ethers*—Dr J. L. Norula, College of Engineering & Technology, New Delhi.

58. *Chelates of mercapto and analogous compounds*—Dr H.H. Chakraborty, Jadavpur University, Calcutta.

59. *Radical polymerization*—Dr G.S. Misra, Lucknow University, Lucknow.

60. *Synthesis of tetracyclines*—Dr A.B. Kulkarni, Institute of Science, Bombay.

61. *Synthetic investigations in the terpenoid field*—Dr O.P. Vig, Panjab University, Chandigarh.

62. *Induced oxidation of organic acids by halogens and generation of free radicals in solution*—Dr S. Ghosh, Jabalpur University, Jabalpur.

63. *Synthesis of β-homosteroids*—Dr A. Chatterjee, Jadavpur University, Calcutta.

64. *Chemistry of natural products: Studies on the structures of the compounds isolated from the trunk bark of Feronia elephantum*—Dr R.D. Tiwari, Allahabad University, Allahabad.

65. *Redox polymerization*—Dr G.S. Misra, Lucknow University, Lucknow.

66. *Biosynthesis of soluble RNA*—Dr D.P. Burma, University Colleges of Science & Technology, Calcutta.

67. *The mechanism of fatty liver in protein deficiency states with special reference to Kwashiorkor*—Dr K.L. Mukherjee, Institute of Child Health, Calcutta.

68. *Research unit on plant metabolism*—Dr P.S. Krishnan, Lucknow University, Lucknow.

69. *Control mechanism for cholesterol biosynthesis*—Dr A. M. Siddiqu, Muslim University, Aligarh.

70. *Determination of base sequence in DNA*—Dr H.K. Pujari, Ravenshaw College, Cuttack.

71. *Diurnal variations in enzymes, protein and non-protein nitrogen in plants*—Dr G.G. Sanwal, Lucknow University, Lucknow.

72. *Development of plasma jets for manufacture of acetylene and other endothermic compounds*—Dr R. Satapathy, Shri Ram Institute for Industrial Research, Delhi.

73. *The mechanism of carotene biosynthesis in carrots and mangoes*—Dr V.V. Modi. M.S. University of Baroda, Baroda.

74. *Studies in the development and evaluation of suitable formulations of sodium carboxymethyl cellulose (CMC) and starch ethers in the sizing of textile yarns*—Dr H.R. Chipalkatti, Shri Ram Institute for Industrial Research, Delhi.

75. *Studies in the abrasion resistance of chemically modified cellulosic textiles*—Dr V.B. Chipalkatti, Shri Ram Institute for Industrial Research, Delhi.

76. *Studies in graft polymerization on cellulosic materials*—Dr V.B. Chipalkatti, Shri Ram Institute for Industrial Research, Delhi.

Pharmaceuticals & Drugs

77. *Cardioactive principle from certain species of Leguminosae*—Dr M.P. Khare, Lucknow University. Lucknow.

78. *Pharmacotherapeutic studies of callophyllolide and isolation of other physiologically active compounds from Calophyllum inophyllum Linn. nuts*—Dr R.B. Arora, All India Institute of Medical Sciences, New Delhi.

79. *Amino acid and peptide derivatives as possible anti-tumour compounds*—Dr A.B. Sen, Lucknow University, Lucknow.

Transfer of Scheme

The research scheme 'Shock waves in fluid dynamics and magneto fluid dynamics' has been transferred from the Gorakhpur University to Allahabad University along with the staff.

RESEARCH IN PROGRESS

National Laboratories

RRL, HYDERABAD

Studies on Quinazolines—Starting from suitably substituted *o*-nitrobenzaldehydes, seven new quinazolines carrying chloro, methoxy and methyl groups in the aromatic ring have been synthesised. The conventional two-step procedure of Riedeal has been modified to proceed in one step only wherein the aldehyde and formamide are refluxed in ethanolic solution in the presence of Raney nickel. The use of acetamide instead of formamide afforded 2-methylquinazoline in good yield; with benzamide, no 2-phenylquinazoline could be obtained.

The following new condensed rings have been synthesised: *s*-Triazolo (4, 3-*c*) quinazoline, 3-phenyl *s*-triazolo (4, 3-*c*) quinazoline, 3-mercapto (4, 3-*c*) quinazoline, 1 *H* (1, 2, 4. 6) tetrazepino (4, 5-*b*) indazole, (1, 2, 4, 6) tetrazepino (4, 5-*c*) quinazoline, and 13*H*, *s*-triazolo (5, 1-*b* : 4, 3-*c*) diquinazoline.

CDRI, LUCKNOW

A New Muscle Relaxant—As animal experiments with methiodide of hayatin—an alkaloid isolated from the roots of *Cissampelos pareira* (Parhi)—showed that it could cause muscle relaxation by blocking the neuromuscular junction and that its effect could be reversed by neostigmine, its potency being equal to that of *d*-tubocurarine chloride, the well-known muscle relaxant, the drug has been prepared on a pilot scale and is being used in clinical trials. In 26 cases of abdominal surgery, the relaxation produced by the drug was satisfactory. Recovery from the effect of the drug has been very smooth and rapid following the administration of neostigmine. The drug holds promise of substituting the imported drugs like tubocurarine.

CRRI, NEW DELHI

Traffic Signals—Traffic control problems are complicated in India on account of mixed traffic conditions comprising motor vehicles, animal-driven vehicles and cyclists, a situation generally not met with in the western countries. Multiphase traffic signals have been tried successfully in the western countries to reduce conflicts between different types of movements at the complicated intersections. The selection and arrangement of simultaneous flows of movement permitted to clear through the intersection in different signal cycle intervals are called phases. The use of such signals under Indian conditions has been taken up for study.

As a first step, a 4-phase traffic signal is being installed at a congested intersection in New Delhi to find out if it would provide safe movements to pedestrians and vehicles with the minimum of delay.

Sponsored Research

Absorption and Dispersion of Microwaves in Polar Gaseous Molecules—The line width of $9_{1,9} \rightarrow 8_{2,6}$ transition of sulphur dioxide broadened by nitrogen, carbon dioxide, methyl bromide and sulphur dioxide has been measured at different pressures. In all cases, the line width varies linearly with pressure. The line widths for SO_2-CO_2 and SO_2-N_2 collisions (dipole-quadrupole interaction) are lesser than the line widths for SO_2-CH_3Br and SO_2-SO_2 collisions (dipole-dipole interaction).

The measured line width for SO_2-N_2 collisions is 4.19 Mc/mm.; the hard sphere collision diameter corresponding to this is 5.68 A° as compared to the kinetic collision diameter of 4.0 A°. The line width for SO_2-CO_2 collisions is 7.22 Mc/mm.; the corresponding hard collision diameter being 8.01 A° as compared to the kinetic collision diameter of 4.0 A°. The results in these two cases have been interpreted on the basis of Anderson's theory assuming a dipole-quadrupole interaction responsible for the width. The quadrupole moments of nitrogen and carbon dioxide have been evaluated as 2.79 $\times 10^{-26}$ and 5.37 $\times 10^{-26}$ e. s. u.

The line width for SO_2-CH_3Br collisions is 13.64 Mc/mm.; the hard sphere collision diameter being 12.1 A° as compared to kinetic collision diameter of 4.0 A°. In this case, dipole-dipole interaction is likely to be mainly responsible for the line broadening. The width calculated from Anderson's theory due to dipole-dipole interaction comes out to be 22.4. Mc/mm. Thus, the results are in disagreement with Anderson's theory.

The line width for SO_2-SO_2 collisions comes out to be 11.23 Mc/mm.; the corresponding hard sphere collision diameter being 4.29 A°. The line width for SO_2-SO_2 collisions is slightly lesser than that for SO_2-CH_3Br case. This may be due to larger dipole moment of methyl bromide.

The absorption of microwaves in various planetary atmospheres has been calculated and the optimum frequency for interplanetary communication with least power requirement and maximum convenience has been determined. It has been found that the absorption of microwaves in various planetary atmospheres (except in the case of Jupiter in whose atmosphere ammonia is present) is very small. From an analysis of ionospheric, cosmic radio noise and transmission loss considerations, an optimum frequency for interplanetary communication near 3000 Mc/s. has been suggested—KRISHNAJI *et al.*, Physics Department, Allahabad University, Allahabad.

Research Papers

KRISHNAJI & SURESH CHANDRA (Physics Department, Allahabad University, Allahabad)—Molecular interaction and line width of asymmetric top molecule SO_2 : Part I SO_2-N_2 collisions. *J. chem. Phys.*, 38 (1963), 232; Part II—SO_2-CO_2 collisions. *J. chem. Phys.*, 38 (1963), 1019.

RAM GOPAL & R.K. SRIVASTAVA (Chemistry Department, Lucknow University, Lucknow)—Studies on solutions of high dielectric constant: Part III—Partial molal volumes of some uni-univalent electrolytes in formamide at different temperatures. *J. Indian chem. Soc.*, 40 (1963), 99.

PERSONAL

(*Contd from p. 1, col. 3*)

DR G.S. SIDHU, Deputy Director-in-charge, RRL, Hyderabad, left for U.S.A. on June 30, 1963 on deputation at the invitation of M/s Riker Laboratories, who have recently entered into an agreement with CSIR to test organic compounds synthesised at RRL for pharmacological activity. Dr Sidhu will also visit other important research laboratories in Europeen route.

SHRI DINESH MOHAN, Deputy Director-in-charge, CBRI, Roorkee, attended the International Conference on Wind Effects on Buildings and Structures organised by the National Physical Laboratory, Teddington (U.K.) during June 26-28, 1963.

SHRI ZACHARIA GEORGE, Junior Scientific Officer, CBRI, Roorkee, returned on June 7, 1963 after completion of training in prestressed concrete in several French firms. He was awarded a diploma in Be'ton Pre 'constraint' and was elected a Member of the Society des Ingineery Civil de France.

SHRI M.H. PANDYA, Architect, CBRI, Roorkee, has been elected an Associate Member of the Indian Institute of Architects. He has also been elected a Member of the American Society of Planning Official.

DR J.C. SRIVASTAVA, Officer on Special Duty (Extension), CSIR, New Delhi, has been admitted as Member of the Institute of Information Scientists Ltd, London.

SHRI S K. KAPUR, Senior Scientific Assistant, NPL, New Delhi, has been elected an Associate Member of the Indian Institute of Chemical Engineers.

Dr V.C. Vora

Dr Vinayak C. Vora, Senior Scientific Officer : Grade I, Central Drug Research Institute, Lucknow, has been appointed, on promotion, Assistant Director (Antibiotics) with effect from June 21, 1963.

Born on October 10, 1925 at Baroda, Shri Vora had his high school and university education in the S.P. Hakimji High School, Bordi, and Baroda College, Baroda, respectively. He took post-graduate training under Prof. T. Reichstein at Pharmazeutische Anstalt, Basel, Switzerland and later under Prof. H. Raistrick, F.R.S., at the London School of Hygiene and Tropical Medicine and obtained the Ph. D. degree of the London University in 1951 for his thesis entitled 'Biochemistry of *Penicillium gilmanii* Thom. and certain other moulds'. Dr Vora also got training in polarography at the Physical Chemistry Institute, Charles University, Prague, and attended courses in general microbiology at the Chelsea Polytechnic, London.

After his return from England, Dr Vora joined CDRI, Lucknow, as Junior Scientific Officer ; he was promoted as Senior Scientific Officer : Grade II, in 1956 and as Senior Scientific Officer : Grade I in 1960.

Dr Vora has published about 30 research papers in the field of vitamins and antibiotics.

Patents

Filed

88213 : *Physiologically active amides derived from 1, 2-diphenylethylamines*—P.P. Rao, P.B. Sattur, G.S. Sidhu & S.H. Zaheer, RRL, Hyderabad.

88214 : *A new clinching device to seal fibre straps on packages*—P. Veerraju, CFTRI, Mysore.

88568 : *Improvements in or relating to the preparation of anticonvulsant compositions*—A.P. Bhaduri, N.M. Khanna & M.L. Dhar, CDRI, Lucknow.

Accepted

79211 : *A method for the production of superior grade (smoke point above 20 mm.) of kerosene and aviation turbine fuels from high aromatic content (about 40 per cent) middle distillates of crude oil*—S.K. Bose, A.K. Ganguli, A.N. Basu, N.G. Basak & A. Lahiri, CFRI, Jealgora.

79598 : *An improved device for the continuous vapour phase degreasing of metallic wire and strip*—M.J. Shahani, NML, Jamshedpur.

81247 : *An improved moulding device for the preparation of soil specimens for unconfined compressive strength test*—D.K. Sundd & A.K. Bhattacharya, Agra College, Agra.

Sealed

75407 : *Improvement on the Indian Patent No. 55816 relating to the process of desulphurising industrial gases*—S.C. Varshney, S.C. Ghosh, S. Banerjee, N.G. Basak & A. Lahiri, CFRI, Jealgora.

76683 : *Improvements in or relating to techniques for filling of tubes*—G D. Joglekar, D. Sen & S.K. Kapur, NPL, New Delhi.

Switzerland

368792 : *Improvements in or relating to the preparation of costus root oil and the products thereof*—G.R. Kelkar & S.C. Bhattacharyya, NCL, Poona.

PROCESS

Antipriming Agents—Accumulation of salts in boiler feed water causes priming, i.e. sudden bursting of water with subsequent carry over in steam pipes. Priming not only reduces the efficiency of the boiler but necessitates frequent cleaning. This can be avoided by the addition of small quantities of certain compounds known as antipriming agents, which are at present being imported.

A process (Indian Pat. No. 77081) for the preparation of new types of polyamides which can be used as antipriming agents has been developed at the National Chemical Laboratory, Poona, using indigenously available fatty acids and imported polyamines. The process, which consists in condensing vegetable oils or higher aliphatic acids (saturated / unsaturated / hydroxy) with polyalkylene polyamines, is simple and gives good yields. The antipriming agents (used in the form of 10 per cent emulsion in water) are being produced on a pilot plant (60 gal./batch) scale. Consumer acceptability trials carried out by the Indian Railways have shown that the compounds are very effective in inhibiting priming. Most of the equipment for a plant for producing the compounds are indigenously available and the capital outlay for a plant of capacity 100 kg. emulsion/day is expected to be about Rs 40,000.

Parties interested in undertaking commercial development of the process may correspond with : Executive Director, National Research Development Corporation of India, Mandi House, New Delhi-1.

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CSIR NEWS

VOL. 13 AUGUST 12, 1963 : SRAVANA 21, 1885 NO. 15

MEETINGS AND SYMPOSIA

A meeting of the Executive Council of the National Chemical Laboratory, Poona, will be held in the Laboratory at 10 a.m. on August 17, 1963. Dr T. R. Govindachari, Director, CIBA Research Centre, Bombay and Chairman of the Executive Council, will preside.

A meeting of the Executive Council of the National Aeronautical Laboratory, Bangalore, will be held on September 2, 1963 at the Laboratory. Shri J. R. D. Tata, Chairman of the Executive Council, will preside.

Human Relations in Industry

The fifth conference on Human Relations in Industry, organised by South India Textile Research Association, will be held at Coimbatore on August 18 & 19, 1963. Shri Manubhai Shah, Union Minister for International Trade, will inaugurate the conference which will be held in there sessions besides the inaugural session.

Symposium on Nucleic Acids

A symposium on Structure, Biosynthesis and Function of Nucleic Acids will be held at the Regional Research Laboratory, Hyderabad, in the middle of January 1964. About 50 invitees from India and abroad are expected to attend the symposium.

Abstracts and full papers to be presented should reach Dr P. M. Bhargava, Assistant Director, Regional Research Laboratory, Hyderabad-9 by November 1, 1963 and December 15, 1963 respectively.

All enquiries regarding the symposium should be addressed to either Dr P. M. Bhargava or Dr G. Satyanarayana Rao of the Laboratory.

Carbon & Carbon Products Seminar

A four-day seminar on Carbon and Carbon Products will be held at the National Physical Laboratory, New Delhi, in the last week of November 1963 The scope of the seminar covers the following sections : (i) Raw materials including binders, (ii) Carbon technology, (iii) Testing of carbon products, and (ii) Equipment for manufacture.

Abstracts and full papers to be presented should reach the Laboratory by September 15 and October 15, 1963 respectively.

Seminar on Electrochemistry

The fourth seminar on Electrochemistry will be held at the Central Electrochemical Research Institute, Karaikudi, sometime in December 1963.

Abstracts (in triplicate) and full papers (in duplicate) to be presented should reach the convener Dr H. V. K. Udupa, Assistant Director, Central Electrochemical Research Institute, Karaikudi-3 (S. Rly) by September 1 and October 15, 1963 respectively.

Dr S. H. Zaheer

Dr S. Husain Zaheer, Director-General, Scientific and Industrial Research, returned to India on July 26, 1963 after a tour of Europe and UAR (*CSIR NEWS*, Vol. 13, Nos 12 & 13).

CECRI, Karaikudi

The foundation stone of the building for the magnesium pilot plant of the Central Electrochemical Research Institute, Karaikudi, was laid by Shri K. Kamaraj, Chief Minister, Madras State, at the Institute premises on July 15, 1963. The project on pilot plant production of magnesium is sponsored by the Madras Government,

PERSONAL

Appointments

DR R. K. S. MEHTA—Senior Scientific Officer : Grade I, IIP (March 26, 1963).

DR N. S. SRINIVASAN—Senior Scientific Officer : Grade I, CRRI, New Delhi (July 6, 1963).

SHRI B.M. RAI CHOUDHURY—Junior Scientific Officer, NML, Jamshedpur (June 12, 1963).

SARVASHRI M. N. P. VERMA & RANBIR PRASAD—Field Officers, NML, Jamshedpur (June 17, 1963).

SARVASHRI R.K. GUPTA, ARJUN DEV, A. V. VENKATESH, B. A. CHITNAVIS & S.K. GHOSH—Junior Scientific Officers, IIP (March 29, April 1, 3 & 13, 1963 respectively).

Promotions

SHRI R.A. RAO, Senior Scientific Officer : Grade II—Senior Scientific Officer : Grade I, IIP (June 17, 1963).

SHRI P.L. GUPTA, Senior Scientific Assistant—Junior Scientific Officer, IIP (Dec. 22, 1962).

Transfer

DR S.C. DATTA, Regional Liaison Officer, CLRI, Madras—CSIR Secretariat, New Delhi (July 17, 1963).

Resignation

SHRI G.H. VARADARAJULU, Senior Scientific Officer : Grade II, CRRI, New Delhi (Aug. 2, 1963).

* * *

DR M.G. KRISHNA, Deputy Director-in-charge, IIP, was deputed to West Germany for attending the Sixth World Petroleum Congress at Frankfurt and to acquaint himself with the latest developments in petroleum research at the French Institute of Petroleum, Paris. He left India on June 18, 1963.

DR J.S. AHLUWALIA, Assistant Director, IIP, was deputed (for a fortnight w.e.f. June 7, 1963) as a member of the Indian delegation on behalf of Indian Refineries Ltd (Ministry of Mines and Fuel) to U.S.S.R. to finalise the expansion of Barauni and Gujarat refineries.

DR I.B. GULATI & SHRI M. KURIEN, Senior Scientific Officers : Grade I, IIP, have been deputed (w.e.f. June 7. 1963) for 7 months' training at the French Institute of Petroleum (FIP), Paris, under a Collaborative Agreement between CSIR and FIP.

(Contd on p. 4, col. 1)

BRIEFS

CBRI Annual Report

The Annual Report of the Central Building Research Institute, Roorkee, for 1962-63 has been published.

The publication (Royal 8vo, pp. 44) reports the progress of research work of the Institute under the following divisions : (i) Building materials, (ii) Soil engineering, (iii) Design and performance of structures, (iv) Efficiency of buildings ; (v) Building practice and productivity ; (vi) Architecture, and (vii) Information and Survey. Also included in the report are seven appendices.

A special feature of the report is the inclusion of 'Summary' which highlights the important results of research investigations.

Bulletin of RRL, Jammu

The second number (January 1963) of the biannual *Bulletin of Regional Research Laboratory, Jammu,* has been published. The 184 - page periodical contains 32 papers, besides 100 abstracts of research papers on medicinal and aromatic plants published during 1960 throughout the world. The number also lists all publications, including research papers, of the Laboratory during 1940-62.

Corrosion of Metals

The proceedings of the symposium on Corrosion of Metals, sponsored jointly by the Defence Research & Development Organisation and the Council of Scientific & Industrial Research and held at Kanpur during November 9-11, 1962, have been publised.

The publication (pp. 292+xvi) contains 42 extracts of papers presented at the symposium under the heads: Fundamental studies (3) ; Corrosion inhibitors (9) ; Nonmetallic protective coatings (2) ; Petroleum-based protectives and organic coatings other than paints (6) ; Metallic coatings and paints (2) ; Corrosion problems in industry (3) ; Environment at studies (3) ; Special corrosion problems (5) ; Practical corrosion problems (8) ; and Laboratory methods and current research on corrosion (1) Technical discussions are also included in the publication.

Visits

Sir Robert Jackson and Mr David Blickenstaff, Representative and Resident Representative in India (respectively) of U.N. Special Fund, visited the following national Laboratories : IIP, Dehra Dun (June 24, 1963) ; NAL, Bangalore (July 11, 1963) ; and CMRS, Dhanbad (July 15, 1963).

NCL, Poona

A course of Russian language is being organised from June 1, 1963 at the National Chemical Laboratory, Poona, for the benefit of scientific staff.

NAL, Bangalore

The National Aeronautical Laboratory, Bangalore, has been recognised by the Panjab University as a centre of research leading to the Ph.D. degree in engineering and technology.

U.S. Aid to CFTRI

The Central Food Technological Research Institute, Mysore has received a gift of equipment worth $ 6500 for studies on vegetable protein foods from the Williams Waterman Fund Research Corporation, U.S.A. The equipment includes, among other things, international model HR 1 centrifuges and Spinco ultramicro-analytical system.

New Research Schemes

The following is the third and last list of research schemes sanctioned by the Governing Body on the recommendation of its Advisory Board for the year 1963-64. The first and the second lists appeared on July 8 & 22, 1963 issues of *CSIR News.*

Geology & Mineralogy

80. *Stratigraphic and structural relations of the Pro-Vindhyan rocks of Northern and Central Rajasthan*—Dr K. Naha, Indian Institute of Technology, Kharagpur.

81. *Mineralisation and its relationship to stratigraphy, structure and igneous action along part of the Singhbhum shear zone, south of Dhalbhumgarh, Bihar*—Prof A. K Banerji, Presidency College, Calcutta.

82. *Physico-chemical and petrological studies of the different grades of coal in the Karanpura coalfields, Bihar, and the application of the results*—Shri B. C. Mukherjee, Jadavpur University, Calcutta.

Metals

83. *Studies in elastic and mechanical properties of metals and alloys*—Dr Bh. Krishnamurthy, Andhra University, Waltair.

84. *Atmospheric corrosion of metals in some parts of North Gujarat*—Shri J.D. Talati, Patan Arts & Science College, Patan (Gujarat).

Biology

85. *Studies on the metabolic effects of antibiotics*—Prof. S. Banerjee, Bikaner Medical College, Bikaner.

86. *Metabolism of fatigue enzyme inactivation*—Dr K.S. Swami, Shri Venkateshwara University, Tirupati (A.P.).

87. *Studies on the growth mutation and genetic control in bacterio phages X and S13*—Dr R.K. Poddar, Saha Institute of Nuclear Physics, Calcutta.

88. *Systematic survey of fresh water algae of Bombay and its environs*—Smt Ella Anne Gonzalves, St Xavier's College, Bombay.

89. *Surface and secondary microorganisms of potato in relation to the early blight caused by* Alternaria solani—Dr S. Sinha, Agra College, Agra.

90. *Studies on the biology of some Indian wool-rotting fungi and the decays of felled timber caused by them*—Dr S.N Banerjee, Calcutta University, Calcutta.

91. *The comparative physiology of the crustacean pigmentary effects* —Dr R. Nagabhushanam, Andhra University, Waltair.

Retired Scientists' Schemes

1. *Study of the southern semi-arid region of India on a photosociological and ecological basis*—Dr F.R. Bharucha, Dastur Hall, Nana Peth, Poona.

2. *Studies on the fluid pressure within the body cavities of animals*—Dr C.P. Gnanamuthu, No. 2, Fourth Main Road, R.A. Puram, Madras.

3. *Taxonomy and ecology of high altitude insect life of the Himalaya above timberline*—Dr M.S. Mani, St John's College, Agra.

4. (i) *Reaction of boron trifluoride and fluoborates*, (ii) *the mineralogical status of Indian China clays* and (iii) *physico-chemical studies of co-ordination in complex compounds*—Dr M.B. Kabadi, 'Franconia', Dubhash Estate Road, Colaba, Bombay.

RESEARCH IN PROGRESS

National Laboratories

CFRI, JEALGORA

Plastic Layer of Coals—The influence of various factors, such as load acting on coal charge, addition of inerts and pitch, oxidation, on the plastometric properties of coals of various ranks has been studied. The study has shown that the maximum thickness of the plastic layer can be used as an additional parameter for classification of coal in respect of its coking properties Some of the other conclusions of the study are : (i) The maximum thickness of plastic layer gradually increases on increasing the load acting on the coal charge, the medium to weakly coking coals showing a greater increase ; (ii) addition of increased proportion of coke breeze or non-coking coals reduces gradually the thickness of plastic layer of coals ; the fineness of the coke breeze (i.e. surface area) is of greater consequence ; (iii) the thickness of plastic layer of low fluid types of coals increases appreciably on addition of hard pitch, and the increased thickness of plastic layer contributes to the production of metallurgical coke from such pitch blends ; (iv) oxidation reduces gradually the thickness of plastic layer of coals ; (v) the physical properties of cokes as given by the various indices have a fairly close correlation with the thickness of plastic layer of the corresponding coals and blends ; and (vi) the amount of chloroform extract of different coals intially slack-heated and subsequently shock-quenched is directly related to the maximum thickness of plastic layer—R. HAGUE, S.K. SHARMA, N.N. DAS GUPTA & A. LAHIRI.

NML, JAMSHEDPUR

Pig Iron from Rajasthan Iron Ore and Limestone—Preliminary assessment trials conducted in the low-shaft furnace pilot plant using iron ore and limestone deposits of Rajasthan have shown that small iron-producing plants based on electric or low shaft blast furnace can be established in the State. As there are no coal deposits in Rajasthan, the investigations were carried out using surplus metallurgical nut coke pending availability of coke from low temperature carbonisation of Umrer or other suitable coal from Madhya Pradesh.

CDRI, LUCKNOW

Oscillopolarography of Biologically Active Anionic Polymers—An oscillo-polarographic method has been standardized for the detection and quantitation of inorganic condensed phosphates, heparin, hyaluronic acid, chondroitin and dextran sulphates. This method enables the differentiation of polyphosphates of varying sizes as also polyphosphates from plysacharides when electrolyte content and *p*H are properly adjusted. The investigation has been carried out in collaboration with the Institute of Biophysics, Czechoslovak Academy of Sciences.

CRRI NEW DELHI

Uniform Road Signs—Traffic signs in India vary from state to state, causing confusion to road users. Hence, uniform urban traffic signs conforming to the headings, Warning, Regulatory, and Informative-recognized internationally, have been proposed for adoption in the country. As far as possible, symbols have been used for conveying the message. Warning signs of diamond shape with black symbols on yellow background and red border; regulatory signs, except the stop signs, of circular shape with black symbols on white background and red border; informative signs of rectangular shape with white background and black lettering have been proposed. Because of special importance of stop sign, octagonal shape white lettering on red background and white border has been proposed for it. Warning and regulatory signs will have a rectangular plate appended to them to convey the message in words until the road users grasp the meaning of the symbols used.

These signs along with those used in the country at present will be put on trial for determining their comparative target and legibility distances. Final recommendations will be made after these designs are available.

Sponsored Research

Study of Wall-catalysed and Homogeneous Reactions under Electric Discharge — Comparative study of reactions under thermal and electric discharge conditions as also the effect of introducing a heterogeneous substance has been made. In the case of electric discharge, the time variations of discharge current and of the accompanying Joshi effect are important factors. A study of the decomposition of nitrous oxide under electric discharge when finely divided glass was introduced has revealed that no change in the kinetics or order of the decomposition takes place and this can be detected by enhancements in discharge current and Joshi effect. The identity in many of the physical properties of nitrous oxide and its isoster carbon dioxide has been shown to hold good in respect of threshold potential when examined in a Siemen's type ozonizer discharge. However, it has been found that while nitrous oxide decomposes completely, carbon dioxide does so only partially under electric discharge probably due to difference in thermodynamic properties.

In the case of decomposition of potassium chlorate under electrical excitation it has been found that it does not follow the same course as under thermal decomposition. Continued electrical excitation inhibits the decomposition, bringing the reaction to a virtual halt. The variations in the accompanying Joshi effect have been found to be more sensitive indicators of the chemical change than the usual pressure variations.

Studies in Joshi effect in various inert gases at low temperatures in discharge tubes made of inert materials have shown that the adsorption of ions fundamental to the phenomenon, is physical rather than chemical.

Research Papers

S.K. RANGARAJAN (CECRI, Karaikudi)—Faradaic impedance : Effect of migration in the diffuse double layer. *Canad. J. Chem.*, **41** (1963), 1007.

N. SUBRAMANYAN, P.L. ANNAMALAI & C. RAJAGOPAL (CECRI, Karaikudi)—The role of meteorology in corrosion. *Corrosion Sci.*, **3** (1963), 65.

W.M. VAIDYA & K.C. NAGPAL (NPL, New Delhi)—An experimental study of the 'electron' and 'vibrational' temperatures in low pressure discharge through nitrogen. *Proc. phys. Soc. Lond.*, **81** (Pt 4) (1963), 682.

M. PANCHOLY & S.P. SINGAL (NPL, New Delhi)—Ultransonic studies in aqueous solutions of zinc acetate : Part II. *Nuovo Cim.*, Ser. X, **28** (1963), 292.

A. V. MOMIN & A. P. B. SINHA (NCL, Poona)—A theoretical study of p-layer resistance on the efficiency of photovoltaic solar energy converters. *J. Electron. Control*, **14** (1963), 425.

PERSONAL

(Contd from p. 1, col. 3)

for 6 months' training in 'Studies on slag metal equilibria', under a French Government Scholarship.

DR R N IYER, Senior Scientific Officer : Grade II, CDRI, Lucknow resumed duties on June 10, 1963 after completion of his training at the Institute of Organic Basic Chemistry, Leipzig.

SHRI R SRINIVASAN, Senior Scientific Officer : Grade II, CECRI, Karaikudi has been, deputed to Canada under the Colombo Plan for training in theoretical aspects of fused salts.

DR G. N. SRIVASTAVA, Junior Scientific Officer, CDRI Lucknow, left for France for advanced training in haematology.

DR P. R. DASGUPTA, Senior Scientific Officer : Grade II, CDRI, Lucknow, has been deputed to U.S.A. for 12 months' training in experimental biology under the Worcester Foundation Fellowship.

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DR A. LAHIRI, Director, CFRI, Jealgora, has been nominated a member of the Planning Group on Coal, Ministry of Mines & Fuel.

PROF. S.R. MEHRA, Director, and Officer-in-charge (Traffic Division), CRRI, New Delhi have been nominated principal member and alternate member respectively on the Governing Body of the National Road Safety Council, Ministry of Transport & Communications.

DR V. JAGANNATHAN, Assistant Director, NCL, Poona, has been invited to be a member of the Advisory Board of *Biochemica et Biophysica Acta*.

DR B.K. BHATTACHARYA, Assistant Director, CDRI, Lucknow, has been nominated a member of the Medical Panel on Poisonous Substances used in Agriculture, Ministry of Health.

DR K. N. SINHA, Officer on Special Duty, CMRS, Dhanbad, has been nominated a member of the Mine Safety Equipment Advisory Board, Union Ministry of Labour & Employment.

DR A.B. KAR, Assistant Director, CDRI, Lucknow, has been nominated (i) member of the Family Planning Programme Evaluation and Planning Committee of the Director-General of Health Services ; and (ii) member of the Hormones and Vitamins Sub-Committee of the Indian Pharmacopoeia Committee, Ministry of Health.

DR P M BHARGAVA, Assistant Director, RRL, Hyderabad, has been nominated a member of the General Council of the Central Family Planning Institute.

SHRI SURINDER SINGH, Senior Scientific Officer : Grade I, NML Jamshedpur has been nominated a member of the Panel for Reactivity Index of the Indian Standards Institution (ISI)

DR D.S. BHATIA, Assistant Director, CFTRI, Mysore, has been reappointed convener of the Cereal Products Sub-Committee of ISI.

SHRI S. GUPTA, Officer-in-charge, Coal Survey Station, Jharia (CFRI, Jealgora) has been nominated a member of the Coal Production and Distribution Advisory Committee, Ministry of Mines & Fuel.

SHRI KSHIROD R. BHATTACHARYYA, Junior Scientific Officer, CFTRI, Mysore, has been awarded the D.Sc. degree of the Calcutta University for his thesis : *Studies on Sakaguchi reaction.*

Dr D. J. Mehta

Dr D. J. Mehta, Senior Scientific Officer : Grade I, CSMCRI, Bhavnagar, has been promoted as Assistant Director with effect from July 16, 1963.

Born on December 31, 1920 at Vartej (Saurashtra), Shri Mehta passed the B.Sc. examination of the Bombay University in first division and was selected as a fellow of the M.T.B. College, Surat (1943-44) from where he took his M.Sc. degree in inorganic chemistry in 1945. He proceeded to U.S.A. in 1946 and joined the Chemical Engineering Department of the Polytechnic Institute of Brooklyn, New York and obtained M.Ch. Engineering in 1948, and D.Ch. Engineering in 1950 under Dr J.J. Mattiello for his thesis : Tetrachlorophthalic anhydride in alkyd resins and plasticizers.

On his return, Dr Mehta joined the National Chemical Laboratory, Poona, and carried out studies on chlorination of silicon and ilmenite sand for the production of silicon and titanium tetrachlorides. He joined the Central Salt & Marine Chemicals Research Institute, Bhavnagar, in March 1954 and was promoted as Senior Scientific Officer : Grade II in 1956 and Senior Scientific Officer : Grade I, in 1961. During the last nine years he has carried out work on the manufacture of various qualities of salt and has helped the Hindustan Salt Company in setting up a factory at Sambhar Lake for the manufacture of free flowing table salt and dairy salt. He has also done considerable work on utilization of bitterns. Dr Mehta has publishsd several papers on salt and recovery of by-products.

PATENTS

Filed

88851 : *Improvements in or relating to the electrolytic reduction of benzoic acid to benzyl alcohol*—H. V. Udupa, G.S. Subramanian, K. Natarajan K.S. Udupa, CECRI, Karaikudi.

Accepted

78216 : *A process for the production of 3-pentadecylcyclohexanol from cashewnut shell liquid*—S. C. Sethi, D.D. Nanavati & B.C.S. Rao, NCL, Poona.

79075 : *Improvements in or relating to the two-stage electrochemical production of dialdehyde starch*—H.V. Udupa, M.S. Venkatachalapathy & R. Ramaswamy, CECRI, Karaikudi.

79388 : *A process for the manufacture of bloated clay aggregate (designated 'gaylite') from the silt deposited by the river Hooghly*—S.K. Chopra & Kishanlal, CBRI, Roorkee.

Sealed

76997 : *Improvements in or relating to the production of copper powder by electrolytic process*—S.R. Ranganathan, NML, Jamshedpur.

77225 : *A process for the preparation of β-ionone from pseudoionone*—B.N. Joshi, K.K. Chakravarti, S.C. Bhattacharyya & R.C. Shaw, NCL, Poona.

U.K.

912786 (Div. Appl No. 21492/62) : *Improvements in or relating to a vehicle lamp fitting for vehicles*—C.R. Gupta, NPL, New Delhi.

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CSIR NEWS

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MEETING

The meeting of the Executive Council of the National Aeronautical Laboratory, Bangalore, which was to be held on September 2, 1963 (*CSIR News*, Vol. 13, No. 15, p. 1) has been postponed to September 4, 1963.

Dr S. H. Zaheer

Dr S. Husain Zaheer, Director-General, Scientific & Industrial Research, has been nominated Chairman of the Board of Directors, National Research Development Corporation with effect from Aug. 1, 1963.

Swiss Experts to CSIO

Mr FRITZ CLAUS joined as Principal, Indo-Swiss Training Centre (CSIO), Chandigarh, under the agreement between CSIR and the Swiss Foundation for Technical Assistance, Zurich (Jan. 11, 1963).

MESSRS HANS THOMMEN, FRANZ SUTER & HANSUELI LUTZ joined the Indo-Swiss Training Centre (CSIO), Chandigarh, as Instructors (July 12, 1963).

MESSRS B. M. SANSON, ALBERT SENNHAUSER & DR A. I. PETRONKO, Swiss Experts under U. N. Special Fund Project joined the Central Scientific Instruments Organisation (June 2, July 25 & June 2, 1963 respectively).

P E R S O N A L

Appointments

SHRI M.N. SYED—Senior Scientific Officer: Grade I, CECRI, Karaikudi (July 15, 1963).

SHRI A. P. JAIN—Administrative Officer: Grade I, RRL, Jorhat (July 12, 1963).

SHRI C.S. PAI—Curator: Grade II, BITM, Calcutta (Aug. 14, 1963).

Promotion

SHRI T. K. PARTHASARATHY, Senior Scientific Assistant—Junior Scientific Officer, CLRI, Madras (July 15, 1963).

Transfers

DR R. K. SRIVASTAVA, Information and Liaison Officer, CFRI, Jealgora, has been transferred to CSIR Secretariat, New Delhi, for a period of 6 months with effect from Aug. 13, 1963 in connection with the work of CSIR Reviewing Committee.

SHRI M.V. SUBRAHMANYAM, Civil Engineer, RRL, Hyderabad—CSIR Secretariat, New Delhi (Aug. 14, 1963).

Resignations

MRS A. GOHAIN, Junior Scientific Officer, RRL, Jorhat (July 8, 1963).

DR P. KUMAR, Senior Scientific Officer, RRL, Jorhat (July 25, 1963).

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DR B. C. BASU, Junior Scientific Officer, CLRI, Madras, returned (June 10, 1963) from East Germany after completion of training.

SHRI T. S. KRISHNAN, Junior Scientific Officer, CLRI, Madras, has been deputed for three months' training in the Small Industrial Extension Training Institute, Hyderabad.

DR T. N. RAMACHANDRA RAO, Senior Scientific Officer, CFTRI, Mysore, left for Tokyo, under the Colombo Plan, for training in industrial fermentation with special reference to amino acid production.

MR B. K. BELLO, a FAO fellow from Nigeria, joined CLRI, Madras, for training (July 9, 1963).

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DR B. R. NIJHAWAN, Director, NML, Jamshedpur, has been nominated on the Development Council for Non-ferrous Metals and Alloys, reconstituted by the Ministry of Industry.

DR M. L. DHAR, Deputy Director in-charge, CDRI, Lucknow, has been nominated member of the Advisory Board on Forest Utilisation, Government of Uttar Pradesh.

DR D. S. DATAR, Deputy Director-in-charge, CSMCRI, Bhavnagar, has been nominated member of the Development Council for Inorganic Chemical Industries, Ministry of Commerce & Industry.

DR K. S. CHARI, Deputy Director, Central Design & Engineering Unit, CSIR, New Delhi, has been appointed a Director of Pyrites & Chemicals Development Co. Ltd, by the National Industrial Development Corporation.

SHRI BALDEV SINGH, Industrial Liaison & Extension Officer, CSIR, New Delhi, has been nominated member of the Research Committee of the Khadi & Village Industries Commission.

SHRI DAVE, Assistant Director, CPHERI, Nagpur, has been nominated member of the Advisory Body for the Gobar (cow dung) Gas Scheme, Khadi & Village Industries Commission.

(contd on p, 4, col. 1)

Prof. S. K. Mitra

We record with deep regret the demise of Prof. S. K. Mitra, F. R. S., National Professor, on Aug. 13, 1963 at Calcutta. Prof. Mitra was a pioneer of radio research in India and was closely associated with the CSIR Radio Research Committee since its inception in 1943.

A meeting to condole the death of Prof. S. K. Mitra was held on Aug. 14, 1963 at the Council of Scientific & Industrial Research Secretariat, New Delhi and the following resolution was passed :

"The Director-General, Scientific and Industrial Research, officers and staff of CSIR and its national laboratories and institutes record their deep sense of grief at the great loss to the scientific world by the death of Dr S.K. Mitra, F.R.S., National Professor of Physics and pioneer of radio research in India. This meeting conveys its heart-felt condolences to the members of the bereaved family."

B R I E F S

National Report on Geomagnetism & Aeronomy

The Geophysics Research Board has brought out a report (pp. 14) entitled National Report on Geomagnetism and Aeronomy, 1962.

Under Geomagnetism, the report refers to the systematic magnetic observations made by the Alibag, Kodaikanal, Annamalainagar and Trivandrum magnetic observatories of the India Meteorological Department and also mentions that extensive magnetic observations have been carried out at a number of places near Trivandrum in connection with the establishment of a rocket sounding base near the magnetic equator in South India. The report also refers to the published studies on solar and lunar geomagnetic variations, parametric studies relating to the equatorial electrojet, relationship between rise times and magnitudes of S.S.Cs., solar control on geomagnetic bays, solar flare effects and geomagnetic effects produced by the Johnston Island nuclear explosions of July 9, 1962. A reference is made to the studies undertaken at the Physical Research Laboratory, Ahmedabad, on the variations of cosmic rays in relation to changes in the plasma flows from the sun.

A magnetic survey of India over an area of 38,500 sq. km. made on vertical and horizontal intensities and declination using absolute instruments, QHM and BMZ, is also referred to in the report.

Palaeomagnetic investigations on the Malani rhyolites, Sylhet traps, Bijawar traps, Deccan traps, Rajmahal traps and Mundwara Complex conducted mainly by the Tata Institute of Fundamental Research, Bombay, the Andhra University, Waltair, and the National Geophysical Research Institute, Hyderabad, are discussed in brief.

Under Aeronomy, the work done at Ahmedabad, Bombay, Calcutta, Kodaikanal, Madras, New Delhi, Tiruchirapalli and Trivandrum on ionospheric drifts, ionospheric absorption, cosmic radio noise and solar flare effects is referred to in the report. Other items referred to are theoretical atmospheric models which have been worked out at New Delhi in respect of temperature, molecular mass, oxygen concentration and collision frequency for heights ranging from 130 km. to 1000 km., ozone and radioactive isotope measurements made regularly at New Delhi, Ahmedabad, Kodaikanal and night airglow observations made at Poona, Abu and Srinagar.

The report also includes a bibliography citing 107 papers on aeronomy and 24 on geomagnetism published during the period.

Information Scientists' Conference

The salient features of the Conference of Information Scientists held at Mysore in May 1963 have been compiled and brought out in the form of a booklet.

The publication (pp. 76) contains the Welcome Speech by Dr V. Subrahmanyan, Director, CFTRI, Mysore ; a paper entitled 'Role of Information Scientists and the Institution of Information Scientists, India' by Shri A. Rahman, CSIR, New Delhi, and Inaugural Address by Dr S. Husain Zaheer, Director-General, Scientific & Industrial Research.

Discussions of the four sessions Library & Documentation Services, Research on Information Problems, Industrial Research & Extension Services, and Dissemination Services, besides the plenary session containing the concluding remarks and recommendations by Shri A. J. Kidwai, Secretary, CSIR, are featured. List of papers submitted to the Conference and the list of participants are also appended.

IIOE News Letter

The Indian National Committee on Oceanic Research, CSIR, has decided to issue quarterly news letters containing the progress made from time to time in the Indian programme of the Expedition as is being done by the other participating countries

The first number (June 1963, pp. 6) deals with : the cruising programme of the Indian vessels *INS Kistna* and *R.V. Varuna ;* the establishment and organisation of the International Meteorological Centre at Bombay ; and the Indian Ocean Biological Centre at Ernakulam. Mention is also made of the fellowships and deputations of the Government of India and Unesco for work in connection with the Expedition ; and programmes of other participating countries in the Expedition.

Terminated Schemes

The following research schemes have been terminated with effect from Aug. 31, 1963.

1. *Construction of a structure factor computer and vector shift analyser on X-ray crystallographic calculation*—Prof. R.S. Krishnan, Indian Institute of Science, Bangalore.

2. *Reaction of dimethylolurea with cotton cellulose*—Dr P. C. Mehta, Ahmedabad Textile Research Industry's Research Association, Ahmedabad.

3. *Studies on insect biochemistry*—Dr (Mrs) Radha Pant, Allahabad University, Allahabad.

4. *Investigation in the photosynthesis of amino acids*—Dr Krishna Bahadur, Allahabad University, Allahabad

5. *Synthesis of the pentocyclic hydrocarbons* ($C_{24}H_{26}$) *derived from cholesterol*—Dr K.C. Bhattacharyya, University College of Science & Technology, Calcutta.

6. *Study of bacterial production of sulphur from sulphates using cheap sources of hydrogen donor*—Dr T.K. Ghosh, Jadavpur University, Jadavpur.

7. *In vitro culture of plant organs*—Prof. P. Maheswari, Delhi University, Delhi.

8. *Morphology, histochemistry and life-histories of Cestode parasites of animals from Delhi*—Dr L.N. Johri, Delhi University, Delhi.

9. *Cytological studies in Solanaceae*—Dr J. Venkateswarlu, Andhra University, Waltair.

10. *Cytology of endosperm of some Indian plants*—Dr S.L. Tandon, Delhi University, Delhi.

11. *Regional gravity and magnetic investigation in parts of Gondwana formation in the Godavari Valley*—Dr B.S.R. Rao, Andhra University, Waltair.

12. *Investigation of the correlation between Atterberg limits, etc.*—Shri J. Walter, Soil Mechanics & Research Division, Madras.

13. *Tortional failure of thin walled cold rolled sections*—Shri S. Divakaran, M.B.M. Engineering College, Jodhpur.

RESEARCH IN PROGRESS

National Laboratories

CFRI, JEALGORA

Briquetting of Inferior Lignite and Coal Fines—A new process for briquetting of inferior grades of lignite available in Jammu & Kashmir has been developed. In the process saw dust is blended with lignite. A briquetting press (capacity, 10 tons/hr), based on the new process, has been installed by the Institute at Shalteng in Srinagar.

Cooking oven and heating appliances, which can use the briquettes produced, have also been designed.

A cheap briquetting process for coal fines of Kalakot region, using inorganic binders, has also been developed.

CFRI, Jealgora—Briquetting Press installed by the Institute at Shalteng

CFTRI, MYSORE

Curing and Enrichment of Fresh Rice—Milled rice from freshly harvested paddy can acquire the cooking properties associated with old, stored rice, when treated according to a process developed by the Institute. The process consists in heating rice at 100°C. for about an hour in a closed chamber so that the heat and humidity built inside the hot chamber will cure the rice. The heated rice is transferred to gunny bags and allowed to cool overnight.

Rice can also be enriched with calcium and B-group vitamins using the above method. A mixture of calcium carbonate and B-group vitamins (thiamine, niacin and riboflavin) as a dry powder is added to the rice kept in a closed heat-jacketed rotating drum. The temperature is raised and maintained at 95-100°C. for about 40 min. and then cooled slowly. It is found that the nutrients get incorporated into the rice and are appreciably resistant to washing prior to cooking. The retention of riboflavin is lower than that of the other nutrients.

CSMCRI, BHAVNAGAR

Potassium Nitrate for Defence and Pharmaceutical Use—Potassium nitrate finds use in pyrotechniques, match industry, glass and ceramic glazes, medicines and as fertiliser. Commercially available saltpetre obtained from the surface deposits occurring in Uttar Pradesh, Bihar, Orissa, Punjab and Madras State, contains only up to 95 per cent potassium nitrate, and is therefore not suitable for use in explosives and medicine for which high purity potassium nitrate is required. A process has been developed for refining saltpetre; it consists in dissolving crude saltpetre at 110°C., filtering the solution at its boiling point and repeatedly recrystallising. The final product is of high purity (99.98 per cent) and satisfies the grade required for defence and pharmaceutical purposes.

CBRI, ROORKEE

Cellular Roofing Units—A new type of precast cement concrete unit with trapezoidal cells has been developed for flat roofs. The optimum size of the unit has been established as 2 ft × 4 ft and weight about 200 lb. They are placed on precast R.C. beams and covered with 1 in. thick lean concrete (1:8:16).

These units can be readily cast with the help of a simple timber formwork and require only a nominal reinforcement of 10 SWG wire at 4 in. centre both ways in the bottom flange. The units withstand a static load of 450 lb./sq. ft and an impact load of a 60 lb. sand bag dropped from a 5 ft height.

The complete assembly has been tested and found to be capable of taking a load of 400 lb./sq. ft. This roof results in a saving of about 46 per cent in steel and is about 20 per cent cheaper than conventional slab and T-beam construction. This type of roofing unit has been used in an experimental school building at Roorkee.

CBRI, Roorkee—Cellular Roofing Unit developed by the Institute

IIOE

Occurrence of Sardines and Mackerels in Deep Water—Special cruises between Cape Comorin and the equatorial regions of the Indian Ocean made by the Indian vessel *R.V. Varuna* during September-October 1962 have revealed along the Kerala and South Canara coasts the existence of deep water patches of sardines and mackerels, which were hitherto found only in the surface waters. The results of the cruises also show that surface waters are fertilized by the 'upwelling' of the sub-surface waters during certain parts of the year. These areas are thus able to support rich plant and animal life on which fishes subsist.

PERSONAL

(Contd from p 1, col 3)

DR S. K. BARAT, Assistant Director, CLRI, Madras, has been nominated to represent the Institute on the Animal Casings Sub-Committee of the Indian Standards Institution (ISI).

DR N. RAMANATHAN, Assistant Director, CLRI, Madras, has been nominated to represent the Institute on the Leather Boards Sub-Committee of ISI.

SHRI P. N. CHOWDHURY, Senior Scientific Officer, CLRI, Madras, has been nominated to represent the Institute on the Sub-Committee on Special Export Promotion for Leather and Leather Manufacture in Leather Export Promotion Council.

SHRI D. S. JOHAR, Senior Scientific Officer, CFTRI, Mysore, has been nominated member of the Indian Central Spices and Cashewnut Committee, Ministry of Food.

DR V. SREENIVASAMURTHY, Senior Scientific Officer, CFTRI, Mysore, has been nominated member of the Spices and Condiments Sectional Committee of ISI.

SHRI S. B. DESHAPRABHU, Production Officer, Publications and Information Directorate, CSIR, New Delhi, has been permitted to work on the ISI Committee for bringing out a special issue of ISI Bulletin on the occasion of the triennial meetings of the International Organisation for Standardization to be held in November 1964.

The following officers of the Central Electrochemical Research Institute, Karaikudi, have been nominated members of the various committees of ISI noted against them ; DR K. S. G. DOSS, Director (*Principal*) & DR H. V. K. UDUPA, Assistant Director (*Alternate*)—Electro-technical Division Council ; SHRI B. A. SHENOI, Senior Scientific Officer (*Principal*) & SHRI S. RAMACHANDRAN, Senior Scientific Officer (*Alternate*) — Electroplating Sectional Committee ; DR P. B. MATHUR, Senior Scientific Officer (*Principal*)—Panel of Brass Plating ; DR H. V. K. UDUPA, Assistant Director (*Principal*) & SHRI S. SAMPATH, Senior Scientific Officer (*Alternate*)—Secondary Cells and Batteries Committee ; SHRI V. ARAVAMUTHAN, Assistant Director (*Principal*) & SHRI S. SAMPATH, Senior Scientific Officer (*Alternate*)—Primary Cells and Batteries Sectional Committee.

Shri D. M. Rao

Shri D. M. Rao, Senior Scientific Officer : Grade I, National Aeronautical Laboratory, Bangalore, has been appointed, on promotion, Assistant Director with effect from July 22, 1963.

Born in Allahabad on July 4, 1932, Shri Rao had his education there up to the university level. In 1951, he proceeded to U. K. for studies in aeronautics at the Imperial College, London University and obtained the Diploma of the Imperial College in 1953. During this period, he also gained practical experience in the Aerodynamics Department of the Fokker Aircraft Factory, Amsterdam.

On return to India in June 1955, Shri Rao joined the Department of Aeronautical Engineering, Indian Institute of Science, Bangalore, as a Lecturer and taught post-graduate classes in aircraft piopulsion and experimental aerodynamics. During 1958-60, he worked as Project Engineer of a CSIR project, Aerodynamic design aspects of transonic/supersonic blowdown wind tunnels, in the Institute. In June 960, he joined the National Aeronautical Laboratory, Bangalore, as Senior Scientific Officer : Grade I to work on the high-speed wind tunnel project of the Laboratory. Shri Rao has since been directing experimental work on pilot high-speed wind tunnels for gaining experience and the design of a 1-ft × 1-ft trisonic blowdown tunnel.

PATENTS

Filed

87958 : *Expansion joint fillers from coconut pith, a waste product of the coir industry*—T. N. Sharma, M. L. Puri, & K. L. Sethi, CRRI, New Delhi.

89004 : *A polycrystalline P-N junction photovoltaic solar cell*—A.U. Momin & A.P.B. Sinha, NCL, Poona

U. K.

30129/63 (corresponding to Indian Pat. 86639) : *Improvements in or relating to the dicing of silicon, germanium and like semi-conductor materials to prepare small size dices for the manufacture of transistor family devices* – K.S. Balain, CEERI, Pilani.

Sealed

77081 : *Improvements in or relating to the preparation of polyamide compounds and their compositions and antipriming agents in steam generators*—K.D. Pathak & B.C.S. Rao, NCL, Poona.

77451 : *Improvements in or relating to the production of terpineol*—Bharat Bushan, N.K. Sogani & S.H. Zaheer, RRL, Hyderabad.

76414 : *Improvements in the separation of silica from black alkaline liquor from paper mills*—A.V. Rajeswara Rao, Y. Venkatesham, D.S. Datar, S.H. Zaheer (RRL, Hyderabad) & M. Mohiuddin, Orient Paper Mills, Brajrajnagar.

In September 1962, Shri Rao proceeded abroad on a U.N. Special Fund Fellowship to study modern developments in wind tunnel design and research in other countries for a period of 10 months, when he visited aeronautical establishments in the U.K., West Germany, Holland, Sweden, Belgium, France, Canada, U.S.A. and Japan.

Shri Rao has to his credit a number of technical notes and papers on high-speed wind tunnel design and operation and several semi-technical articles on various aspects of aeronautics. He is an Associate Fellow of the Royal Aeronautical Society, London.

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CSIR NEWS

VOL. 13 SEPT. 9, 1963 : BHADRA 18, 1885 NO. 17

SYMPOSIUM & MEETINGS

Utilization of Metallurgical Wastes

A symposium on the Utilization of Metallurgical Wastes will be held at the National Metallurgical Laboratory, Jamshedpur, in February 1964.

The scope of the symposium will cover the following :

(i) Treatment of fines and other low-grade by-product materials produced during mining and mineral beneficiation plants; (ii) Utilization of by-products and wastes produced in pyro-, hydro- and other extractive metallurgical, smelting and refining operations; (iii) Utilization of waste gases and flue dusts produced during roasting; smelting and refining and economics of recovery operations; (iv) Utilization of metallic scraps, drosses, ashes & skimmings, swarfs and residues resulting during ferrous and non-ferrous metallurgical refining and processing operations; (v) Utilization of spent pickle-liquors and recovery of metallic values from waste solutions; and (vi) Theoretical considerations of recovery of by-products and utilizations of metallurgical wastes.

Intending participants may write to : Dr T. Banerjee, Deputy Director or Shri R.M. Krishnan, Assistant Director of the Laboratory.

* * *

A meeting of the Executive Council of the Central Public Health Engineering Research Institute, Nagpur, will be held at on September 17, 1963 at the CSIR Secretariat, New Delhi. Dr Sushila Nayar, Union Minister for Health and Chairman of the Executive Council of the Institute, will preside.

A meeting of the Chemical Research Committee will be held on September 18 & 19, 1963 at the CSIR Secretariat, New Delhi. Dr J. N. Mukherjee, Chairman of the Committee, will preside.

A meeting of the Executive Council of the Central Road Research Institute, New Delhi will be held at the Institute on September 20, 1963 at 4.00 p. m.

Kidwai Award for CFTRI Scientists

Dr H.C. Srivastava, Senior Scientific Officer : Grade I and Head of the Storage & Preservation Division and Dr. V. Subrahmanyan, Director, Central Food Technological Research Institute, Mysore, have been jointly awarded the Rafi Ahmed Kidwai Prize (of the value of Rs. 5000) for 'Horticulture' for 1960 and 1961 by the Indian Council of Agricultural Research (ICAR). The award is in recognition of an outstanding research work, 'New approach for storage and preservation of fruits and vegetables with particular reference to potato, tomato and pineapple'.

Shri Ram Subhag Singh, Minister of Agriculture, distributed the prize to the recipients of the award at the annual general meeting of ICAR held at New Delhi on August 30, 1963.

Dr P.S. Gill

Dr P.S. Gill whose appointment as Director of the Central Scientific Instruments Organization was announced in *CSIR News* (Vol. 13, No. 1 p. 1) took charge on September 2, 1963.

Dr. K. N. Mathur relinquished charge of the office of Director and took over as Officer on special Duty in-charge of the Indo-Swiss Training Centre, CSIO, Chandigarh with effect from September 9, 1963.

Dr M.L. Dhar

Dr M.L. Dhar, Deputy Director-in-charge, Central Drug Research Institute, Lucknow, has been appointed Director of the Institute with effect frnm August 29, 1963. A biography of Dr Dhar has been published in *CSIR News* (Vol. 12, No. 2. p. 2).

Shri A.J. Kidwai

Shri A.J. Kidwai, Secretary, CSIR, who attended the Scientific Management Course in U.K. under the Colombo Plan (*CSIR News*, Vol. 13, No. 14) returned to India and resumed duty on August 26, 1963.

PERSONAL

Promotions

DR R.K. GHOSH, Officer on Special Duty—Assistant Director, CDRI, New Delhi (July 11, 1963).

SHRI A.B. MITRA, Senior Accountant, CMRS, Dhanbad—Accounts Officer, CDRI, Lucknow (July 15, 1963).

SHRI A.S. PRASADA RAO—Junior Scientific Officer, CBRI, Roorkee (Aug. 20, 1963).

Transfers

SHRI P.K. GOKHALE, Administrative Officer, CECRI, Karaikudi—IIBEM, Calcutta (July 12, 1963).

SHRI M.G. THAKAR, Administrative Officer, NAL, Bangalore—CPHERI, Nagpur (July 4, 1963).

SHRI HAZARI LAL, Civil Engineer, NPL, New Delhi—CBRI, Roorkee (Aug. 22, 1963).

Resignation

SHRI GHANSHYAM MISRA, Senior Scientific Officer : Grade II, CMRS, Dhanbad (Aug. 21, 1963).

* * *

DR Y. NAYUDAMMA, Director, CLRI, Madras, was deputed to Netherlands for attending the Biennial Conference of International Union of Leather Chemists held in Scheveningen in August 1963. He will also visit West Germany for a period of three weeks as a guest of the West German Government.

(*Contd. on p. 4, col. 1*)

BRIEFS

Human Relations in Industry

The fifth Conference on Human Relations (*CSIR News*, Vol. 13, No. 15, p.l), organised by the South India Textile Research Association (SITRA), Coimbatore, was inaugurated on August 18, 1963 by Shri Manubhai Shah, Union Minister for International Trade, and presided over by Shri G.K. Devarajulu, Chairman, Council of Administration, SITRA. Shri K. Srinivasan, Director, SITRA, welcomed the participants.

Over 350 delegates representing labour, management, academic and government interests attended the Conference. Ten papers were presented and discussed in three technical sessions : (i) Problems in employee relations, (ii) Leadership in industry, and (iii) Productivity and social environment.

Bulletin of the National Geophysical Research Institute

The first number (March 1963) of the *Bulletin of the National Geophysical Research Institute*, Hyderabad, a quarterly research journal, has been brought out. The issue contains a brief history of the Institute and four papers. The quarterly periodical, *Geophysical Digest* (Vol. 11, No. 1) has been incorporated with the bulletin.

Aeronautical Sciences Seminar

The proceedings of the International Seminar on Aeronautical Sciences held at the National Aeronautical Laboratory, Bangalore during November-December 1961 have deen published. The publication contains thirty-one articles by prominent scientists of Australia, France, India, Japan, Netherlands, Rumania, U.K. and U.S.A. in the fields of aviation meteorology, aircraft structures & materials, aerodynamics, fluid mechanics, wind tunnel design & testing, aircraft propulsion, flight research and aviation electronics.

IQSY Assembly

Prof. K.R. Ramanathan, Chairman, Radio Research Committee of CSIR and President of the Indian National Committee for the International Quiet Sun Year (IQSY) attended the Second Assembly of the Council of IQSY held in Rome during March 17-23, 1963. One of the important decisions of the Assembly was to establish a Regional Warning Centre at the National Physical Laboratory, New Delhi, with the cooperation of the India Meteorological Department and All India Radio.

CECRI Refresher Courses

The refresher courses on Electroplating and Storage Battery Technology (*CSIR News*, Vol. 13, No. 10) were inaugurated by Dr S. Husain Zaheer, Director-General, Scientific & Industrial Research, on August 9, 1963.

Research Papers

S.K. RANGARAJAN (CECRI, Karaikudi)—Electrode processes with a preceding chemical reaction : Effect of the diffuse double layer. *Canad. J. Chem.*, **41** (1963), 1469.

S. SUNDARARAJAN, K. C. NARASIMHAN & H. V. K. UDUPA (CECRI, Karaikudi)—Electrolytic preparation of bromates. *Chem. & Process Engng*, **43** (1962), 438.

FRANCISCA THIVY & P. SREENIVASA RAO 1 (CSMCRI, Bhavnagar)—*Polysiphonia gopnathensis*, a new species from Gujarat (India). *Bot. Marina*, **5** (1) (1963), 25.

FRANCISCA THIVY & V. VISALAKSHMI (CSMCRI, Bhavnagar)—A new record of *Caulerpa verticillota* J., Ag. forma typica for India. *Bot. Marina* **5** (1) (1963), 29.

A. K. DEB & SUBHASH CHANDRA (CBRI, Roorkee)—Remedial measures for the prevention of recurrent cracking in small buildings founded on black cotton soils. *Indian Concr. J.*, **37** (1963), 190.

S. S. RESHI & S. K. GARG (CBRI, Roorkee)—Evaluation of Indian fly ashes. *Indian Concr. J.*, **37** (1963), 211.

M. SIRSI, A.K. DORLE & V.S. GOVINDARAJAN (CFTRI, Mysore)—Influence of arecanut extracts on capillary circulation : Part I—Pharmacology of *A. catechu* Linn. (N.O. Palmae). *Licentiate*, **13** (1963), 22.

N. CHANDRASEKHARA, M.V.L. RAO & M. SRINIVASAN (CFTRI, Mysore)—Dietary protein levels, vitamins and lactose on depressant effect of sulfa drugs on urinary and liver ascorbic acid in the rat. *Proc. Soc. exp. Biol., N.Y.*, **112** (1963), 827.

V. SUBRAHMANYAN, C.S. SIDDAPPA, V.S. GOVINDARAJAN & N.V.R. IYENGAR (CFTRI, Mysore)—Utilization of cellulose agricultural wastes : Pulp from banana psuedostem and areca husk. *Indian Pulp Pap.*, **17** (1963), 533.

New Research Schemes

The following research schemes have been sanctioned for the year 1963-64.

1. & 2. *Electronic fibre length analyser* and *Automatic control of moisture in textile processing*—Shri A. Pande, Shri Ram Institute for Industrial Research, Delhi.

3. *Study of the behaviour of structures subjected to shock loading with special reference to earthquake*—Shri D.V. Malick, College of Engineering & Technology, New Delhi.

4. *Ecology of Narmada catchment area and water sheds*—Dr G.C. Pandeya, University School of Sciences, Gujarat University, Ahmedabad.

5. *Ultimate load condition of hipped plate construction in reinforced concrete*—Prof. R. Khanna, Government College of Engineering & Technology, Raipur.

6. *Some characteristics of Indian sewage*—Sarvashri S.J. Arceivala & S.K. Gajendragadkar, Victoria Jubilee Technological Institute, Bombay.

7. *Design and development of transistorized electronic instruments*—Dr S.S. Banerjee, Engineering College, Banaras Hindu University, Varanasi.

8. *Development of multistage axial and radial compressors*—Dr S. Balakrishna, P.S.G. College of Technology, Coimbatore.

Terminated Schemes

The following research schemes have been terminated with effect from August 31, 1963.

1. *Chemotherapy of diabetics*—Dr S.S. Tewari, Lucknow University, Lucknow.

2. *Studies on plant phosphatases*—Dr R.L. Nath, School of Tropical Medicine, Calcutta.

3. *Genetical and biochemical studies of induced mutants of* Aspergillus niger—Dr P.N. Nandi, Bose Institute, Calcutta.

Correction

In the news item relating to the Information Scientists' Conference (*CSIR News*, Vol. 13, No. 16, p. 2), the words 'and recommendations' (para 3, line 8) should be read after the words 'Secretary, CSIR' (para 3, line 9).

RESEARCH IN PROGRESS

National Laboratories

CFTRI, MYSORE

Ready-Mix Flour for Indian Sweets—Preparation of many of the Indian sweets like, *Jilebi*, *Jamun* ; *Jangiree* is often laborious and time-consuming. Besides, some of them need special constituents (like *khoa* in the case of *Jamun*), which are not always readily available. With a view to simplifying the process for household use, dry ready-mix flours based on easily available components have been standardised. Consumer acceptibility trails of the flours have given satisfactory results.

CDRI, LUCKNOW

Stabilization of Vitamins—The effect of acid digest of casein, mixed tocopherols and phosphatides of rice bran on the stability of vitamins A, B_1 and C in syrup-glycerol-water (2:2:1) and 60 and 75 per cent glycerol vehicles has been studied by storing the samples at 37° for 6 months. In the absence of stabilizers, 75 per cent glycerol was found to be better than syrup-glycerol-water vehicle.

In multivitamin preparations, casein hydrolysate alone or in combination with cysteine hydrochloride, gave good protection to vitamins A and B_1, while 0.2 per cent cysteine hydrochloride was effective in stabilizing ascorbic acid in syrup-glycerol-water vehicles. Rice bran tocopherols and phosphatide exhibited partial protective action only for vitamin B_1.

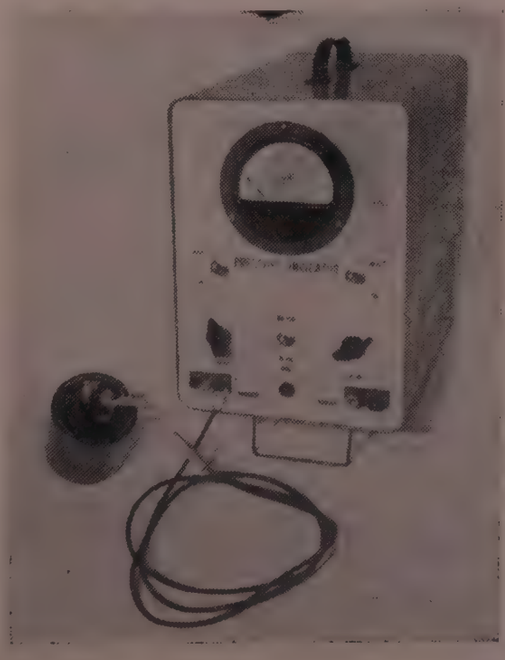
NAL, BANGALORE

Pressure Transducers—Pressure transducers giving electrical output are more advantageous than liquid manometers and other gauges from the point of view of measurement and recording. Mechanical methods of transmission and recording, as used in normal gauges, affect the dynamic response of the system adversely, whereas the transmission of electrical signals can be achieved without any loss in frequency response or magnitude at least over the frequency ranges important in pressure measurements.

As commercial transducers are costly, the Laboratory took the design and development of transducers for pressure measurements in wind studies. As a result, a pressure transducer, in which a linear variable differential transformer is used to sense the displacement at the centre of a diaphragm subjected to the pressure to be measured, has been developed. The transducer has an accuracy greater than $\pm$ 1 per cent. It can measure pressure in the range of 0-100 p.s.i.g. and has a repeatability better than $\pm$ 0.5 per cent—S. BALAKRISHNA & S. SRINATHKUMAR.

Sponsored Research

Pollen Analysis of Quaternary Deposits of Kashmir—The investigation was taken up with a view to build up the climatic sequence and the vegetational development in this region. About 1,500 species of modern plants in the Jammu & Kashmir State were palynologically studied. The studies have helped considerably in the identification of sub-fossil pollen recovered from Quaternary deposits (which vary from clays to organic deposits such as lignite and peat), and stratigraphical studies of both the Ice Age deposits and those formed later.



NAL, Bangalore—Pressure Transducer developed at the Laboratory

Identification and statistical enumeration of the sub-fossil pollens have brought out the pollen sequence of great importance the like of which has never been prepared in this country. The pollen sequence from the lower Karewas, usually referred to I Interglacial, has shown that the lower one-third of the deposits belongs to the Preglacial period.

The beginning of Pleistocene has been found to be largely devoid of vegetational cover and with the gradual amelioration of climate the invading Pine solely represented by *Pinus wallichiana* established a conifer vegetation which later gave rise to mixed vegetation. Towards the latter Part of the I Interglacial, a broad-leaved forest, followed by moist temperate deciduous forest, has been established. The important vegetational phases during the early Pleistocene, such as the Oak woods and Spruce Oak woods, are absent from the Valley today. The vegetational sequence also revealed the eastern elements in the I Interglacial flora such as *Alnus nepalensis*, *Larix*, etc. which continued to exist for some time but later got exterminated.

A sequence of glacially cold climate changing into warm temperate and ending as cool moist climate has been observed during the I Interglacial period.

From the Post-glacial sediments, especially the peat deposits, a more or less complete sequence has been obtained from Tosh Maidan. This also brings out the more or less similar climatic sequence, cool-warm-cool, as observed during the I Interglacial. The pollen sequence comprising the decline of Oak woods and suggesting the return of the cooler climate might have also been the result of human interference with natural vegetation. This period roughly corresponds to the Neolithic times, when the Stone Age man and his successors were very active in clearing forest, introducing agriculture and providing land for their domesticated animals

to graze. Evidence of agriculture has, however, been obtained from pollen analysis in the Valley. Cereal pollen of maize has been identified. From the introduction of maize in the country it would appear that the Valley pollen analyses from the Walanwer and Braman give us a vegetational development during the past 400 years.

The Tosh Maidan sequence has also brought out fairly large quantities of Oak pollen during the warmer period but it still remains to be established whether the Oak pollen suggested the immigration of Oak into the Valley. The occurrence of indigenous Oak species, *Quercus semicarpifolia* and *Q. dilatata*, has been found in the Valley which would suggest their being the remanent of the Post-glacial Oaks but the evidences at hand show them to be introductions into the Valley during historical period—G. S. PHILLOURA, K. M. S. SAXENA & B. D. SHARMA, Birbal Sahni Institute of Paleobotany, Lucknow.

PERSONAL

(Contd from p. 1, col. 3)

DR G.B. SINGH, Senior Scientific Officer : Grade II, CDRI, Lucknow, resumed duties after completion of training at Harvard Medical School Mass. (Aug. 3, 1963),

DR C.W. BROACH, Junior Scientific Officer, CDRI, Lucknow, resumed duties after completion of training in U.K. (Aug. 1, 1963).

DR P. NILAKANTAN, Director, NAL, Bangalore, has been nominated on the *ad hoc* Committee set up by the Osmania University to frame the detailed scheme of instruction, syllabus and examination in Aeronautical Engineering.

PROF. K.N. KAUL, Director, NBG, Lucknow and Shri D.N. Bordoloi, Senior Scientific Assistant, RRL, Jorhat, have been nominated members of the team to undertake a survey of the NEFA area for the cultivation of medicinal plants.

DR G.S. SIDHU, Deputy Director-in-charge, RRL, Hyderabad, has been nominated member of the Technical Advisory Committee of the Andhra Pradesh Productivity Council and one of the Advisers to the State Medical Research Committee.

SHRI N. JAYARAMAN, Junior Information Officer, Publications & Information Directorate, CSIR, New Delhi, has been elected an Associate Member of the Institute of Information Scientists (India).

Dr K. Seshadri

Dr Kadamby Seshadri, Senior Scientific Officer : Grade I, Central Salt & Marine Chemicals Research Institute, Bhavnagar, has been promoted as Assistant Director with effect from August 8, 1963.

Born on August 20, 1916 in Mysore, Shri Seshadri took his B. Sc. degree from the Mysore University in 1939 and M.Sc. degree in chemistry from the Banaras Hindu University in 1941. During 1943-49 he was working at the Indian Institute of Science, Bangalore. He joined the National Chemical Laboratory, Poona, in 1950 and worked on the preparation of nitrogen and phosphate fertilizers. In 1951 he was awarded Ph.D. degree of the Banaras Hindu University. In 1957, he was appointed Junior Scientific Officer at the Central Salt Research Institute, Bhavnagar, and was promoted as Senior Scientific Officer : Grade II the same year, and as Senior Scientific Officer : Grade I in 1961.

Dr Seshadri was deputed to Canada under the Colombo Plan in 1962 for training in the utilization of marine and saline lake products at the Saskatchewan Research Council, Saskatoon. His special fields of study are phase rule equilibria of salt solutions and recovery of chemicals from sea and inland saline lakes. He has carried out work on the recovery of sodium sulphate from Sambhar lake bitterns, and potassium chloride, and magnesium sulphate from mixed salt.

Dr Seshadri has published 17 research papers and has 6 patents to his credit.

Shri K.L. Datta

Shri Krishan Lal Datta has been appointed Assistant Director, Central Building Research Institute, Roorkee, with effect from August 7, 1963.

After his early education at the Government Intermediate College, Campbellpur (West Pakistan), Shri Datta joined Sir J. J. School of Art, Bombay from where he obtained G.D. Arch. in 1954. He was awarded the Mayo Medal and several other prizes. After serving several eminent architects, he joined the Central Building Research Institute, Roorkee as Senior Scientific Officer in 1954. In 1956, Shri Datta was appointed Architect in the University of Roorkee, where he organised undergraduate courses and designed many expansion projects. He was Reader in Architecture and Head of the Architecture Section before he rejoined the Institute

Under a T.C.M. scholarship in 1959 for teachers training programme, Shri Datta joined the University of Illinois (U.S.A.) and qualified for the Master's degree in Landscape Architecture. He was a member of the Indian delegation to the U.N.O. seminar on Essential Services in relation to Urban and Rural Housing, in 1962.

Shri Datta is the recipient of Dr Khosla Gold Medal from the University of Roorkee for his researches in the field of Sun Control and Shading Devices. He is an Associate Member of the Royal Institute of British Architects and the Royal Institute of Chartered Surveyors, and has published several papers in Indian and foreign periodicals.

PATENTS

Filed

89325 ; *N-Haloacyl-2, 3-dihydro-1,4 - benzoxazines*— S. B. Moray, M. Mazharuddin, G. Thyagarajan, G. S. Sidhu & S. H. Zaheer, RRL, Hyderabad.

Accepted

79212 : *Improvements in or relating to the electrolytic reduction of m-dinitrobenzene to 2,4-diaminophenol*—H V. Udupa, G. S. Subramanian & K. S. Udupa

81403 : *Improvements in or relating to devices for the conversion of pig irons into high grade steels*—M. J. Shahani & Upakar Singh, NML, Jamshedpur.

82191 : *An improved jacketed electrolytic cell for the electrodeposition of metals and metallic oxides in general and manganese dioxide in particular*—M.J. Shahani & T. Banerjee, NML, Jamshedpur.

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CSIR NEWS

VOL. 13 SEPT. 23, 1963: ASVINA 1, 1885 No. 18

MEETINGS & SYMPOSIA

A meeting of the Committee of the Board and the Governing Body of the Council of Scientific & Industrial Research will be held at the Conference Room of CSIR Secretariat on October 23, 1963 at 10 a.m. Shri P.A. Narielwala will preside.

Meetings of the Board of Scientific & Industrial Research and the Governing Body of CSIR will be held in the Conference Room of the Ministry of External Affairs, South Block, New Delhi on October 24 & 25, 1963 respectively at 9.30 a.m. Shri Jawaharlal Nehru, Prime Minister and President, CSIR, will preside.

The following are the other meetings to be held in October:

Scientific Sub-Committee, CMRS, Dhanbad—10-00 a.m. on Oct.3, 1963 at the Station.

Executive Council, CDRI, Lucknow—11.00 a.m. on Oct.7, 1963 at the Institute.

Physical Research Committee—3.00 p.m. on Oct. 10, 1963 at Delhi University, Delhi; Dr D.S. Kothari, (*Chairman*).

* * *

A symposium on Fluidization under the auspices of the Chemical Research Committee will be held at the Indian Institute of Technology, Kharagpur in the first week of January 1964.

The scope of the symposium covers: (i) Interaction between fluids and particles; (ii) Dynamics of fluidized bed systems; (iii) Heat & mass transfer studies in fluidized bed & kinetics; and (iv) Scale up & process optimization (industrial application & pilot plant data). Abstracts and full papers to be presented should reach the convener, Dr M. N. Rao, Head of the Chemical Engineering Department, Indian Institute of Technology, Kharagpur before October 31 and November 30, 1963 respectively.

Two symposia, one on Waste Treatment by Oxidation Ponds and the other on Public Health Engineering Education, organised jointly by the Central Public Health Engineering Research Institute, Nagpur, Public Health Engineering Division of the Institute of Engineers (India) & Institution of Engineers, Nagpur will be held in Nagpur during October 29-31, 1963.

The symposium on Waste Treatment by Oxidation Ponds is intended to bring forth the latest information on this subject, and disseminate the new knowledge to as many public health engineers and scientists as possible. The other symposium will provide an opportunity for evolving a rational curriculum for graduate and post-graduate instruction in public health engineering relative to the needs of the nation. It will also afford an opportunity to teachers in public health engineering and practising engineers to discuss problems of mutual interest.

PERSONAL

Dr K. N. Mathur, Officer on Special Duty in charge of the Indo-Swiss Training Centre, CSIO, Chandigarh, took charge on September 2, 1963.

Dr M. L. Dhar, Director, CDRI, Lucknow, took charge on September 2, 1963.

Appointments

Sarvashri S. K. Sarkar & S. K. Mukherjee—Junior Scientific Officers, CMRS, Dhanbad (July 24 & Aug. 1, 1963 respectively).

Dr V. Bhaskara Rao—Senior Scientific Officer : Grade I, NGRI, Hyderabad (Aug. 2, 1963).

Dr V. V. J. Sarma & Shri P. Arthur Paul—Senior Scientific Officers : Grade II, NGRI, Hyderabad (Aug. 2 & 3, 1963 respectively).

(*Contd on p. 4, col. 1*)

USSR invites Dr Zaheer

Dr S. Husain Zaheer, Director-General, Scientific & Industrial Research and *ex officio* Secretary to the Government of India, Ministry of Scientific Research and Cultural Affairs, left India on a 10-day visit to Moscow on September 17, 1963 at the invitation of the USSR Academy of Sciences. He will discuss matters relating to the establishment of a National Biological Research Laboratory in India besides other problems of interest with the USSR Academy of Sciences. During his stay in USSR, he will visit some laboratories and institutes.

Later, Dr Zaheer will visit West Germany as the guest of the West German Akademische Austauschdienst, Bonn and the Von Humboldt Stiftung. He will discuss with these organisations matters relating to the exchange of scientists.

Dr Zaheer is to visit the University of Vienna also. He is expected to return to India on October 3, 1963.

Shri A. Rahman

Shri Abdul Rahman, Assistant Director, History of Science Unit, CSIR, New Delhi, has been appointed Officer on Special Duty for Survey and Planning of Scientific Research, CSIR, New Delhi with effect from September 17, 1963.

CSIR Reviewing Committee

A nine-man committee under the chairmanship of Dr A. Ramaswami Mudaliar has been appointed by the Prime Minister, who is also the President of the Council of Scientific and Industrial Research (CSIR), to review the work and progress of CSIR and to recommend the lines on which its activities should be directed in the national perspective. The members of the committee are: Prof. E.U. Condon, University of Colorado; Sir Charles Goodeve, F.R.S., Director, British Iron & Steel Research Association, London; Sir Patrick Linstead, F.R.S., Rector,

(*Contd on p. 2, col. 3*)

BRIEFS

Electron Microscopy Course

A course on 'Electron Microscopy' jointly organised by the National Physical Laboratory (NPL), New Delhi, and the University Grants Commission, was inaugurated by Prof. Humayun Kabir, Union Minister for Scientific Research & Cultural Affairs and Vice-President, CSIR, on September 7, 1963 at the Laboratory. The course is being conducted by Dr H. Warlimont of the Max Planck Institute of Metal Studies, Stuttgart. About 30 members from various research organisations including NPL, Defence Science Laboratory, All India Institute of Medical Sciences and a number of universities are participating in the course which will last till October 1, 1963.

Proceedings of IGY Symposium: Vol. II

This volume (pp viii + 245), published recently, includes besides the opening talk (by Dr M.S. Krishnan) twenty-four papers and fourteen abstracts in the following disciplines : Meteorology, geomagnetism, aurora and airglow, cosmic rays, oceanography, outer space, seismology and nuclear radiation.

The symposium on the International Geophysical Year was held at the National Physical Laboratory, New Delhi in February 1961 under the joint auspices of the Indian National Committee for IGY and the Physical and Radio Research Committees of CSIR. The first volume of the Proceedings was published early this year.

Central Fuel Research Institute Jealgora

This is the title of an illustrated brochure (pp. 34) published (June 1963) by the Institute and contains a brief history of the Institute, its functions & scope, achievements and future programme. Information on technical services rendered by the Institute and other related matters is also included.

Geophysical Exploration

This recently brought out publication, fifth in the series of NGRI publications, contains proceedings of the symposium organised by the Central Board of Geophysics at the M.S. University of Baroda, Baroda during August 15-17, 1959. The (xii + 227)-page publication contains twenty papers presented and discussed at the symposium. Abstracts of twenty-three other papers contributed to the symposium and a subject index are also included.

NPL, New Delhi—Dr H. Warlimont and Prof. Humayun Kabir at the inauguration ceremony of the Electron Microscopy course

Mr L.L. Van Praag

Mr L.L. Van Praag, a leading mining engineer from U.K., joined the Central Mining Research Station, Dhanbad on August 13, 1963 as an ILO expert. During his tenure (about 6 months) at the Station, he will advise and assist the research staff on matters relating to drilling, cutting and mining machinery.

Mr Van Praag (*b.* 1906) graduated in Mining Engineering from the Technical University of Delft, Holland in 1929 and obtained in 1946 a First Class Certificate of Competency under the British Coal Mines Act.

Starting his career as a District Overman in the Dutch State mine, Emma, Mr Van Praag has had varied experience and service as mining engineer in several coal-mines in different countries. He has lately planned a new colliery for an iron and steel company in India.

Mr Van Praag is a member of the Southern Countries Institute of Mining Engineers and a member of the Institution of Mining Engineers, London. He has published several papers on horizon mining, planning of pit bottoms, colliery management and raising of stapleshafts.

REVIEWING COMMITTEE

(*Contd from p. 1, col. 3*)

Imperial College of Science and Technology, London; Prof. D.M. Newitt, F.R.S., Professor Emeritus, Department of Chemical Engineering, Imperial Colle e of Science and Technology, London; Dr D.S. Kothari, Chairman, University Grants Commission; Prof. P.C. Mahalanobis, F.R.S., Member, Planning Commission; Dr S.R. Sen Gupta, Director, Indian Institute of Technology, Kharagpur: and Dr K.T Chandy, Principal, Indian Institute of Management, Calcutta.

Shri Baldev Singh, Research Coordination, Industrial Liaison and Extension Officer, CSIR, New Delhi, is the Secretary of the committee (*CSIR News*, Vol. 13, No. 12, p.1).

This is the third reviewing committee of the Council of Scientific & Industrial Research. The first was appointed in 1949 with Sir Ardeshir Dalal as chairman and the second in 1954 under the chairmanship of Sir Alfred Egerton, F.R.S.

The committee is expected to carry out its work in two sessions, the first session will meet during November 1963 and the second during January-February 1964.

RESEARCH IN PROGRESS

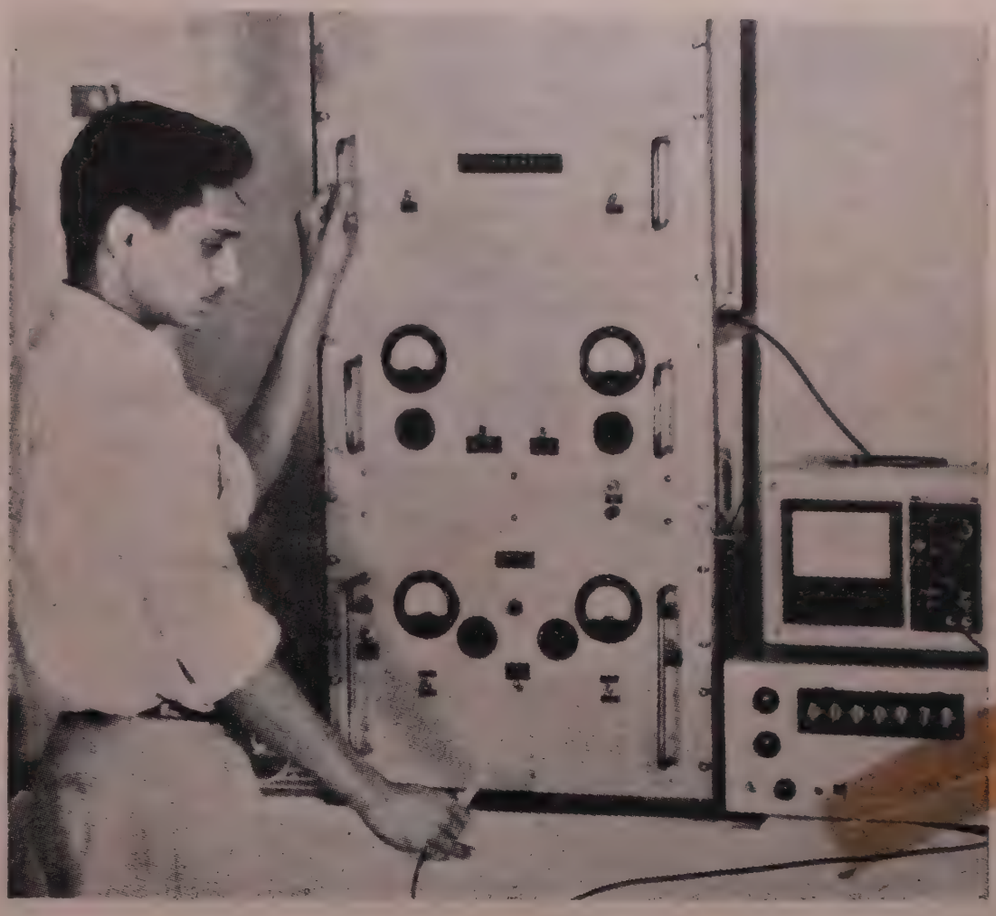
National Laboratories

NAL, BANGALORE

Digital Voltmeter—A ramp-type digital voltmeter has been designed and constructed; this can measure voltages from 0 to 10 V. at the input with an accuracy of 1 per cent (full scale). The output is visually displayed in decimal notation, the time taken for conversion being 1 sec. or less.

In the common voltmeter, the position of a pointer on a calibrated scale indicates the voltage. However, the information indicated by the pointer becomes useful only after conversion into numerical form. Conversion of a continuous (analogue) quantity into digital form manually is time-consuming and often inaccurate and when hundreds of channels of information are to be processed automatically in a second or less, direct digital conversion becomes useful.

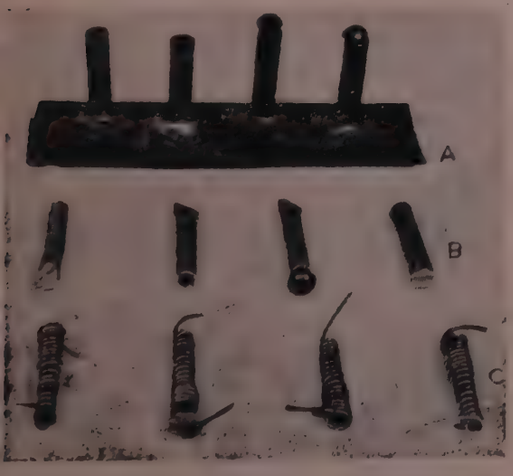
The digital voltmeter is useful in data acquisition and processing system.



NAL, Bangalore—Ramp-type digital voltmeter designed and constructed at the Laboratory

CBRI, ROORKEE

R.C.C. Frames for Doors and Windows—Trials of the use of reinforced cement concrete (R.C.C.) frames instead of hardwood frames for doors and windows have not given definite success in the past primarily because of lack of proper arrangement in the frames for fixing the shutters and secondarily for want of know-how for giving good finish. However, in view of the present scarcity of good quality timber and its increasing cost, interest in R.C.C. frames has been revived and extensive trials for remedying the defects were undertaken. As a result, two simple and economic types of fixing arrangements have been evolved. One of them consists of 3/16 in. diam. aluminium tubes which can be embedded in the frame while casting : the other consists of wire helixes (formed by winding 20 gauge wire on wood screws) which can also be embedded in the frame while casting.



CBRI, Roorkee—Fixing arrangements (B aluminium tubes, C wire helixes, & A aluminium tubes fixed to the frame) developed at the Institute

It has been found that a good finish to the R.C.C. frames can be imparted by rubbing the frames with carborundum stone and applying a final coat of cement paint. A superior finish, such as a terrazzo finish, can also be applied while casting the frames.

Besides, simulated tests on various designs have led to adoption of simpler design in which only three reinforcing bars, instead of the conventional six are employed.

The R.C.C. frames thus evolved are about 50 per cent cheaper than first class hardwood frames. Even with terrazzo finish, the cost compares favourably with that of timber. The main advantages are greater dimensional stability and durability.

CFTRI, MYSORE

Insecticidal and Rodent Repelling Formulation—Several chemicals which deter the attack of rodents on food commodities stored in bags have been screened. Of the chemicals screened, quinine hydrochloride has been found to be a good attractant for rats. Baiting plates treated with quinine hydrochloride (10 mg./sq. ft) can be used for attracting the rats to the baiting points where they can be trapped or poisoned under warehouse conditions.

Some essential oils and thiophosphate compounds have been found to act as rodent repellents. The high viscosity insecticidal formulation of

Durobase, developed earlier in the Institute, has been improved by incorporation of rodent repellent factors. This formulation sprayed externally on the bag stack at the rate of 2-3 ml./sq. ft can repel rats for a period of 60-80 days.

PERSONAL

(Contd from p. 1, col. 2)

SHRI M.S BHALLA—Junior Scientific Officer, NGRI, Hyderabad (Aug. 19, 1963).

DR B. J. ROY GHATAK—Senior Scientific Officer : Grade I, RRL, Jammu (Aug. 26, 1963).

Shri D.S. BHATNAGAR—Sales and Distribution Officer, Publications & Information Directorate, CSIR, New Delhi (Sept. 6, 1963).

DR M. R. NARAYANA—Senior Scientific Officer:Grade II, CSMCRI, Bhavnagar (Aug. 27, 1963).

SHRI J. D. PATIL—Pool Officer, NAL, Bangalore (Sept. 2, 1963).

Promotions

SHRI S.K. BAGAI, Senior Scientific Assistant—Junior Scientific Officer, CMRS, Dhanbad (July 20, 1963).

SHRI V. S. RAMA RAJU—Senior Scientific Officer : Grade II (Oceanic Research Wing), NGRI, Hyderabad (July 22, 1963).

SHRI A. APPA RAO—Junior Scientific Officer, NGRI, Hyderabad (July 30, 1963).

SARVASHRI K. K. LAROIA, H. G. VARTAK & S. BALAKRISHNAN, Senior Scientific Assistants—Junior Scientific Officers, NCL, Poona (Aug. 26, 1963).

SHRI NARANJAN SINGH, Chief Glass Blowing Supervisor—Junior Technical Officer (Glass Blowing), NCL, Poona (Aug. 26, 1963).

DR A. C. MATHUR & SHRI S. N. SOBTI, Junior Scientific Officers—Senior Scientific Officers : Grade I & Grade II (respectively), RRL, Jammu (Aug. 26, 1963).

SARVASHRI R. K. SAPRE & V. SITAKARA RAO, Junior Scientific Officers—Senior Scientific Officers : Grade II, CSMCRI, Bhavnagar (Aug. 27, 1963).

DR U. K. GUHA ROY, Junior Scientific Officer —Senior Scientific Officer : Grade II, IIBEM, Calcutta (Sept. 2, 1963).

SHRI R.M. CHAKRAVARTY—Curator : Grade II, BITM, Calcutta (Sept. 10, 1963).

DR K.N. SINHA, Officer on Special Duty, CMRS, Dhanbad, has been deputed for attending the Third International Mining Congress at Salzburg, Austria. Dr Sinha, who is also a member of the International Organizing Committee of the Congress, is presenting a paper on Mine Fire in India, the first research paper in mining from India which has been accepted at the Congress.

Dr Sinha left Dhanbad on September 10, 1963 for Austria and will return on September 25, 1963.

SHRI V. KALYANARAMAN, Senior Scientific Officer: Grade II & Shri S. BALAKRISHNA, Senior Scientific Assistant, NAL, Bangalore, returned after 9 months' training in erection, commission and maintenance of the unitary air compressor-drier system at the Associated Electrical Industries, U.K. (Aug. 30, 1963).

* * *

DR B.R. NIJHAWAN, Director, NML, Jamshedpur, has been appointed a member of the committee constituted by the Ministry of Mines and Fuel for making recommendations to the Government regarding the location of the zinc smelter plant proposed to be set up with Polish collaboration.

DR M.L. DHAR, Director, CDRI, Lucknow, has been nominated Director, Board of Directors, Hindustan Antibiotics Ltd., Pimpri.

SHRI BALDEV SINGH, Industrial Liaison & Extension Officer, CSIR, New Delhi, has been nominated Secretary of the Committee to review the working of the National Research Development Corporation and to recommend measures for its improvement.

SHRI A. GHOSAL, Statistical Officer, CSIR Secretariat, New Delhi, has been awarded the D. Phil. degree of the Calcutta University for his thesis : *Contributions to the theory of storage (dams)*.

Dr S. Ramachandra

Dr S. Ramachandra, Senior Scientific Officer : Grade I, Central Mining Research Station, Dhanbad, has been appointed on promotion Assistant Director (Engineering Divn) with effect from July 12, 1963.

Graduating in mechanical engineering from the University of Mysore in 1944, Shri Ramachandra obtained practical training followed by teaching, research and executive experience during the next seven years. In 1951, he was appointed Assistant Professor (Mechanical Engineering) in the Indian Institute of Technology, Kharagpur. He was deputed to U.S.A. in 1955 and obtained the M.S. degree in Mechanical Engineering from the University of Illinois. He has specialised in general machine design with particular reference to strength and properties of materials, bearings, and lubrication.

Shri Ramachandra joined the Central Mining Research Station as Senior Scientific Officer : Grade I, in 1960, and was awarded the Ph.D. degree of the Indian Institute of Technology, Kharagpur in 1962 for his research work in Applied Mechanics.

Dr Ramachandra is a member of the Institution of Engineers (India) and has published six research papers in Indian and foreign journals.

Printed and published by Shri B.N. Sastri, Council of Scientific & Industrial Research, New Delhi at Asia Press, Delhi-6

CSIR NEWS

VOL. 13 OCT. 14, 1963, ASVINA 22, 1885 No. 19

NEW MEMBERS OF GOVERNING BODY & BSIR

The following have been nominated on the Governing Body of the Council of Scientific & Industrial Research till March 31, 1965 :

Shri T.T. Krishnamachari, Minister for Finance (*vice* Shri Morarji Desai) ; Shri Swaran Singh, Minister for Food & Agriculture (*vice* Shri K. C. Reddy) ; Shri G. L. Nanda, Minister for Home Affairs (*vice* Shri K.D. Malaviya) ; Shri P.A. Narielwala, Director, Tata Industries (P) Ltd, Bombay (*vice* Shri V.K. Krishna Menon) ; and Dr Satish Dhawan, Director, Indian Institute of Science, Bangalore (*vice* Shri Bakshi Ghulam Mohammed)

The following have been nominated on the Board of Scientific & Industrial Research (BSIR) till March 1965 :

Dr T.S. Subramanian, Director, Ahmedabad Textile Industry's Research Association, Ahmedabad and Dr Satish Dhawan, Director, Indian Institute of Science, Bangalore; Shri N.G. Chakravarty, Managing Director, Steel & Allied Industries, Calcutta (*vice* Shri B. Patnaik); Prof. R.C. Mehrotra, Chemistry Department, Rajasthan University, Jaipur (*vice* late Lala Shri Ram) ; and Dr K.S.G. Doss, Director, Central Electrochemical Research Institute, Karaikudi (*vice* Dr V. Subrahmanyan).

Shri P. A. Narielwala, Director, Tata Industries (P) Ltd, Bombay and member of the Sub-Committee of Board & Governing Body has been nominated chairman of the Sub-Committee (*vice* late Lala Shri Ram). Shri N. G. Chakravarty, Managing Director, Steel & Allied Industries, Calcutta, has been nominated a member of the Sub-Committee (*vice* Shri P.A. Narielwala).

Dr. S.H. Zaheer

Dr. S. Husain Zaheer, Director General, Scientific & Industrial Research, returned to New Delhi on October 7, 1963 after his tour of U.S.S.R., Germany and U.K. (*CSIR News*, Vol. 13, No. 18, p. 1).

SYMPOSIUM

A symposium on Problems in Geophysics relating to the Crust of the Earth (under the auspices of the Geophysics Research Board) will be held in January 1964 at the National Geophysical Research Institute, Hyderabad.

The scope of the symposium will be limited to problems in Geodesy, Seismology, Oceanography, Geophysical exploration, Geochronology and Physical properties of rocks.

Abstracts and full papers to be presented should reach Dr S. Balakrishna, Assistant Director, National Geophysical Research Institute, Hyderabad-7 (A.P.) by November 15 & December 15, 1963 respectively. Enquiries regarding the symposium may also be addressed to Dr S. Balakrishna.

PERSONAL

Appointments

SHRI M. VENKATARAMANA RAO—Junior Scientific Officer, NCL, Poona (Aug. 14, 1963).

SHRI K.N.JOHRY—Senior Scientific Officer : Grade II, Defence Coordination Unit, CSIR, New Delhi (Sept. 13, 1963).

DR AKHTAR HUSSAIN—Senior Scientific Officer : Grade I, RRL, Jammu (Sept. 27, 1963).

SHRI SYED YOUNUS AHMED—Senior Scientific Officer : Grade II, CSMCRI, Bhavnagar (Sept. 19, 1963).

Promotion

SHRI K. SUBBARAMAIAH, Junior Scientific Officer—Senior Scientific Officer : Grade II, CSMCRI, Bhavnagar (Sept. 11, 1963).

Transfer

SHRI K.G. SHAM BHAT, Civil Engineer, NCL, Poona—CFTRI, Mysore (Aug, 5, 1963).

Resignations

SARVASHRI Y.D. MISRA & H. LAHIRI, Senior Scientific Officers : Grade I, CMRS, Dhanbad (June 8 & Aug. 25, 1963 respectively).

CSIO Service Department

The offices of the Director, Central Scientific Instruments Organisation (CSIO) have been shifted from the CSIR Secretariat, New Delhi to Bungalow No. 16-A, Sector 8-A, Chandigarh (Punjab). All future requests for servicing of instruments should therefore be addressed either to the Director at the Chandigarh address or to the Officer in charge, Service Department, CSIO, Kashmere Gate, Near G.P.O., Delhi-6. Instruments should, however, be sent to the Service Department only.

DR M. S. KRISHNAN Director, NGRI, Hyderabad, attended the Thirteenth General Assembly Meeting of the International Union of Geodesy & Geology (IUGG) held at Berkeley, California, U.S.A. during August 17-31, 1963. Dr Krishnan is a member of the Bureau of IUGG.

SARVASHRI D. N. SHROF & SHANTILAL N. MEHTA have been re-elected President and Vice President respectively of the Silk & Art Silk Mills' Research Association, Bombay for 1963-64.

DR K. SESHADRI, Assistant Director & SHRI V. SITAKARA RAO Senior Scientific Officer, CSMCRI, Bhavnagar, have been nominated principal and alternate members

(*Contd on page 2, col. 2*)

BRIEFS

International Quiet Sun Year

The trial period of the International Quiet Sun Year (IQSY) began on October 1, 1963 three months in advance of IQSY. The All India Radio has started broadcasting for the benefit of the ten Indian participating organizations and others interested in wireless communication, 'Alert' and Special World Interval messages in plain language at 2240 hours IST (or 2310 hours on days when the normal programme expands up to 2305 hours) on the following frequencies : 3925, 4760, 6065, 7165 and 9615 kc./s. The messages indicate the condition and geomagnetic activity of the sun every day.

CSIR Activities : A Survey

A brochure (pp. 52 including 10 illustrations) entitled *CSIR Activities : A Survey* has been published by the Publications & Information Directorate. After a brief introduction on the establishment and set-up of the Council of Scientific & Industrial Research, the publication outlines the outstanding contributions of the Council's institutions since their inception. Mention is also made of significant results of research carried out under schemes sponsored by the Council and its endeavour to promote cooperative research, utilization of research results and dissemination of scientific knowledge.

New Research Schemes

The following new schemes have been sanctioned for 1963-64 :

Electrical & Mechanical Engineering

1. *An investigation into the frequency and distribution of lightning strokes in Kerala State*—Dr K. Gopalan, T.K.M. College of Engineering, Quilon.

2. *Experimental investigation of fatigue failure of mild steel under combined bending and torsion of different rates*—Shri T.H.V. Prasad Rao, Roorkee University, Roorkee.

3. *Investigation on oil paper dielectric*—Dr V. Chaudhuri, Jadavpur University, Calcutta.

4. *Development of electro-mechanical machine tools cutter control*—Dr H. Banerjee, Birla Institute of Technology, Ranchi.

5. *Investigation of transients and torque performance of induction machine at starting, braking and sudden changes of loads*—Dr S.P. Verma, Birla Institute of Techology, Ranchi.

6. *Development of static polyphase distance relay element for the protection of electrical power transmission lines*—Dr T.S. Madhava Rao, Roorkee University, Roorkee.

7. *Cross field control magnetic saturable reactors*—Shri V.S. Bansal, M.B.M. College, Jodhpur.

8. *Design of single screw and twin pump and study of its basic theory and performance*—Prof. M.V. Joshi, Department of Chemical Technology, Bombay University, Bombay.

Civil Engineering & Hydraulics

9. *Study of hyperbolic paraboloid shells*—Dr P. Dayaratnam, Andhra University, Waltair.

Physics

10. *Study of frequency power spectrum of lightning discharge*—Prof. S. R. Khastagir, University College of Science, Calcutta.

PERSONAL

(*Contd from p. 1, col. 3*)

respectively on the Alkalis and Chlorine Sectional Committee and Panel for Salt & Marine Products of the Indian Standards Institution in place of Dr D.S. Datar (*CSIR News*, Vol. 13, No. 13, p. 4).

SHRI N.K.D. CHOUDHURY, Assistant Director, CBRI, Roorkee, has been nominated a member of the Technical Committee on Solar Energy Utilization of the American Society of Heating, Refrigerating and Air-conditioning Engineers.

DR K.S. BALAIN, Senior Scientific Officer: Grade I, CEERI, Pilani, has been nominated a member of the Research & Production Committee of the Radio and Cable Board, Ministry of Transport & Communications.

Dr S. Mukerjee

Dr. Sachimohan Mukerjee, Senior Scientific Officer : Grade I, Indian Institute for Biochemistry and Experimental Medicine, Calcutta, has been appointed, on merit promotion, Deputy Director with effect from September 2, 1963.

Shri Mukerjee (*b.*, Calcutta, Feb. 8, 1909) was educated at the Scottish Church, College, Calcutta and R.G. Kar Medical College, Calcutta, and obtained his M.B. degree from the Calcutta University in 1935. He joined the Indian Institute for Medical Research Calcutta (now Indian Institute for Biochemistry & Experimental Medicine) in 1936, and all his research work has been done here. In 1956, when the Institute was taken over by CSIR, he was appointed Senior Scientific Officer : Grade II and in 1960 was promoted to the senior grade.

Since 1936 Dr Mukerjee has been carrying out researches on bacteriological, immunological and epidemiological problems relating to typhoid fever, malaria and cholera. During 1942-43 he worked on oral immunization in typhoid under a fellowship of the Indian Research Fund Association. From 1956 he has been engaged in a phased programme of cholera research. His pioneering work on the development and standardization of a cholera phage-typing technique provided for the first time a precise tool for epidemiological studies in cholera ; application of the technique has also enabled precise differentiation of vibrio strains of classical and El Tor cholera. His studies on the possibility of developing a live oral vaccine for immunoprophylaxis against classical and El Tor cholera represent a fundamental advance of practical significance to the problem of cholera control.

He obtained the D. Phil. degree (Bacteriology) of the Calcutta University in 1960.

Dr Mukerjee's researches have won international recognition and brought him several awards and honours. He was awarded the Watumul Memorial Award in Micro biology by the Watumul Memorial Foundation of Honolulu, Hawaii, U.S.A. in 1961 and the Basanti Amir Chand Senior Award of the Indian Council of Medical Research for 1963. In 1962, he participated, on invitation, in the meeting of the

(*Contd. on p. 4 col. 1*)

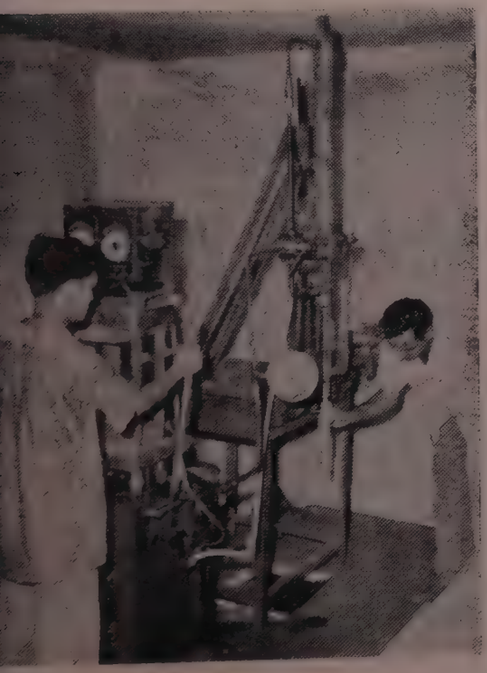
RESEARCH IN PROGRESS

National Laboratories

NPL, NEW DELHI

Hydraulic Extrusion Machine—Extruding of small diameter cores and thin-walled tubes without cracks or distortion of shape is a difficult problem. Vertical extrusion and proper design of the nozzles overcome this difficulty. A hydraulic vertical extrusion machine for extruding small diameter ferrite cores used in radio receivers and other electronic equipment has been fabricated using parts such as rams from tipper trucks.

The advantages of the machine are that it can be fabricated in a short time (less than a month) and its cost of fabrication is also low. It is proposed to make more of these units for large scale production of extruded ferrites.



Hydraulic extrusion machine fabricated at the Laboratory.

NML, JAMSHEDPUR

Utilisation of Blue Dust—Iron ore in the form of very fine blue powder, known as blue dust, occurs in the iron ore mines in India. Due to its fragile nature, its utilisation has been a serious problem. Investigations carried out to determine the extent to which it can be mixed with washed Naomundi iron ore fines for sintering without affecting metallurgical quality of the sinter have shown that blue dust up to the extent of 50 per cent can be mixed to obtain sinter of high strength and quality.

CDRI, LUCKNOW

In vitro Metabolism of Rat Pituitary Gonadotrophin—Investigations have shown that the liver inactivates homologous rat pituitary gonadotrophin *in vitro*. But when it is damaged by carbon tetrachloride it loses this property completely but the addition of thyroxine prevents such inactivation. The inactivation is more potent when the liver tissue is thyroidectomized but this can be prevented by thyroxine both *in vitro* and *in vivo*. The liver tissue of hyperthyroid animals does not inactivate gonadotrophin. These results suggest that such a physiologic association between the thyroid and the liver may be an important pheripheral mechanism for the maintenance of a homeostatic relationship between the gonads and the pituitary.

CRRI, NEW DELHI

Traffic Survey in Bangalore—Ten traffic surveys including origin-destination, speed & delay, volume, parking, mass transportation, etc. have been undertaken by the Institute at Bangalore (at the request of the Government of Mysore) with a view to prepare a traffic and transportation plan for the city. Preliminary work has been carried out to plan origin-destination survey to be started in the first week of November 1963.

Sponsored Research

Studies on Pongam Oil—Soap prepared from pongam oil (a non-edible oil used for fat liquoring of leathers and soap manufacture) has initially an orange colour which changes to brown, dirty green and grey on storage and also retains the odour of the oil. Investigations were undertaken with a view to (i) identify the components responsible for the colour and odour of the soap and to devise ways to remove them from the oil ; and (ii) isolate new pigments and determine their structures.

The following are the two main conclusions of the first study : The deterioration of the colour is not due to karanjin and pongamol, the well known constituents of the oil ; a phenolic constituent in the oil is responsible for the colour change as evidenced by chromatographic analysis.

A process for refining the oil has been worked out on a laboratory scale. The process consists in treating the oil with a mixture of charcoal and bleaching clay at 90° for 4 hr and filtering the mixture when a pale yellow oil without appreciable odour is obtained. The soap obtained from this oil is pale yellow.

Chromatographic study of the pigments showed the presence of three pigments. One of them was found to be pongapin or 3-methoxy-3', 4'-methylenedioxyfurano- (2″,3″-7,8)-flavone. The other two were new pigments, kanjone and pongaglabrone The structures of the two compounds have been established by analytical and degradative studies as 6-methoxyfuranoflavone and 3′,4′-methylenedioxyfuranoflavone respectively ; they have also been confirmed by synthesis starting from resorcinol and 4-O – allylresacetophenone respectively—R. Aneja R.N. Khanna & T. R. Seshadri, Chemistry Department, Delhi University, Delhi.

Research Papers

B.D. Saksena, K.C. Agarwal & G.S. Jauhri (NPL, New Delhi)—The ring band of cyclosilicates. *Trans. Faraday Soc.*, **59** (Part 2) (1963), 276.

A.K. Saha, Mirjana Karabin & K.K. Mahajan (NPL, New Delhi)—Ionospheric effects following distant nuclear detonations. *J. atmos. terr. Phys.*, **25** (1963), 213.

T.K. Saksena & V.N. Bindal (NPL, New Delhi)—Sound absorption in viscous liquids in relation to depolarisation factor in light scattering. *Acustica*, **13** (1963), 61.

A.K. De & M.S. Rahaman (Jadavpur University, Calcutta)—Extraction of manganese with TTA. *Analyt. Chem.*, **35** (1963), 159 ; Extraction of vanadium with TTA. *Analyt. Chem.*, **35** (1963), 1095.

S.K. Rangarajan (CECRI, Karaikudi)—On particular solutions of $\triangleleft^4 \varnothing = 0$ and $E^4 \varnothing = 0$. *Def. Sci. J.*, **13** (1963), 199.

PERSONAL

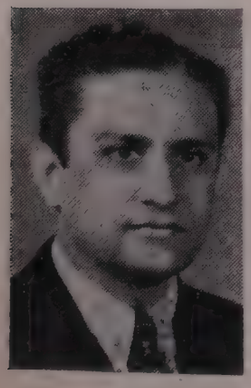
(*Contd. from p. 2, col. 3*)

Scientific Group on Cholera Research of the World Health Organization (WHO). In recognition of his contribution to cholera research he was nominated a member of the WHO Expert Panel on Cholera in 1963 ; financial grant to support these studies has also been sanctioned by the Organization ; besides, the Institute has been recognized as the international reference centre for vibrio phage-typing.

Dr Mukerjee is a member of the American Society for Microbiology and the New York Academy of Sciences. He has published over 60 research papers mostly on cholera research. He has contributed on invitation the chapter on 'Bacteriophage' to the sixth edition of Gradwohl's monograph 'Clinical and Laboratory Methods and Diagnosis'.

Dr S. H. Zaidi

Dr Sibte Hasan Zaidi, Assistant Director, Central Drug Research Institute, Lucknow, has been appointed on promotion Deputy Director with effect from September 2, 1963.



Shri Zaidi (*b.* April 15, 1918) obtained the M. B. B. S. degree of the Lucknow University in 1945 and was the recipient of the Physiology Society and Clinical Society gold medals. After a year's house physicianship and lectureship in pathology at the K.G. Medical College, Lucknow, he proceeded to England and obtained D.C.P. and Ph. D. degrees from the London University, in 1952 and 1954 respectively. In 1955, he joined the Institute as Assistant Director (Experimental Medicine).

Dr Zaidi's researches cover the wide fields of industrial health, namely silicosis, coal workers' pneumoconiosis and its relation to tuberculosis.

As a member of the scientific delegation which visited the United Arabic Republic recently, Dr Zaidi studied the working of medical and research organisations in that country.

Dr Zaidi is a member of the Pathological Society of Great Britain & Ireland and British Association of Pathologist.

He has published many papers in the fields of industrial health, experimental atherosclerosis, experimental coronary thrombosis and peptic ulcers. In association with Prof. E.J. King of the London University, Dr Zaidi is publishing a book on Experimental Pneumoconiosis.

Dr R. K. Ghosh

Dr Ram Kinkar Ghosh, Officer on Special Duty (Rigid Pavement Division), Central Road Research Institute, New Delhi, has been appointed on promotion Assistant Director with effect from July 11, 1963.

Born on February 1, 1933 in West Bengal, Shri Ghosh graduated from the Bengal Engineering College in 1954 with high first class B. E. degree. Later he had training at *Martin Burn Co. Ltd*, Calcutta, and received the C.E. certificate of the Bengal Engineering College. He was appointed Associate Lecturer in the same college and later joined the Bihar Institute of Technology, Sindri, as Assistant Professor. In 1957, he was awarded a scholarship of the German Democratic Republic for postgraduate studies & research, and joined the Town Planning & Highway Engineering Institute of the Technical University, Dresden and obtained in 1960 doctorate degree in Engineering (Dr Ing.) for his thesis, Influence of temperature on the stress conditions of cement concrete pavement surfacings, which secured the distinction 'Summa-cum-laude' (most excellent). Between June 1960 and January 1961 he was engaged in research on rigid pavement. On his return, Dr Ghosh rejoined the Bihar Institute of Technology. He was later appointed in the same year Officer on Special Duty in charge of the Rigid Pavement Division of the Central Road Research Institute, New Delhi where he initiated new problems in the field of rigid pavement research.

Dr Ghosh has published about 20 research papers in Indian and foreign journals. He is co-author of the book, Influence Lines for Statically Determinate Structures, published in 1961.

Erratum

The news items entitled 'Swiss Experts to CSIO' appearing in *CSIR News*, Vol. 13, No. 16, p. 1 should read as 'Experts to CSIO' and the third para of the news item should read as follows : Messrs B.M. Sanson, Albert Sennhauser and Dr A.I. Petrenko, experts under U.N. Special Fund Project, joined the Central Scientific Instruments Organization.

Printed and published by Shri B.N. Sastri, Council of Scientific & Industrial Research, New Delhi at Asia Press, Delhi-6.

CSIR NEWS

VOL. 13 OCT. 28, 1963, KARTIKA 6, 1885 No. 20

GOVERNING BODY DECISIONS

Establishment of a Regional Research Laboratory in Orissa, a Tea Research Association and a Unit for Survey and Planning of Scientific Research are some of the important proposals accepted by the Governing Body of the Council of Scientific and Industrial Research at its meeting held on Oct. 25, 1963 under the Presidentship of the Prime Minister Shri Jawaharlal Nehru.

The Director-General, Scientific and Industrial Research, has been authorised to take steps to constitute a Planning Committee for preparing detailed plans and estimates for the Regional Research Laboratory, Orissa and negotiate arrangements with the Orissa Government for implementation of the proposal. The Government of Orissa has offered to provide land in Bhuvaneswar and other facilities for setting up the laboratory.

The Tea Research Association, which is being set up, will be run as a Cooperative Research Association. The members of the Tea Research Association will bear 50 per cent of the expenditure, and the Tea Board will contribute 25 per cent; CSIR will meet 25 per cent of the expenditure.

At the instance of the Ministry of Scientific Research & Cultural Affairs, CSIR has undertaken a survey of scientific research in the country for Unesco. The Planning Commission has requested CSIR to compile data on distribution of scientific and technical manpower and expenditure on scientific research by State Governments, Central Government and industry. There is also an urgent need for a proper study of the allocation of national resources between various fields of research. In order to carry out all these studies and collect the necessary data, the Governing Body has approved the setting up of a Unit for Survey and Planning of Scientific Research.

The Governing Body has indicated that certain steps should be taken to provide further collaboration between universities and the national laboratories. The Council in consultation with the University Grants Commission may institute and help schools of advanced research in various disciplines in universities and provide necessary facilities for staff and equipment.

Proposals for the establishment of a pilot plant at the National Metallurgical Laboratory, Jamshedpur, for production of cryolite and pilot scale trials on injection of naphtha at the Low Shaft Furnace pilot plant in the Laboratory have been approved.

The Governing Body has endorsed the recommendation of the Publications Committee regarding research journals. While individual laboratories may issue bulletins containing information of value to industry and also house journals, publishing of research periodicals should be the responsibility of the Publications Directorate.

Following the acceptance of the recommendation, the *Annals of Biochemistry and Experimental Medicine*, now issued by the Indian Institute for Biochemistry and Experimental Medicine, Calcutta, will be published by the Publications Directorate from January 1964.

The Governing Body has sanctioned a scheme on automatic sliver evener to be carried out at the Textile and Allied Industries Research Organisation, Baroda.

The Governing Body also approved holding of the following symposia and seminars: *Symposia*—Utilization of Metallurgical Wastes (National Metallurgical Laboratory, Jamshedpur); Pile Foundations (Central Building Research Institute, Roorkee); Problems in Geophysics relating to the Crust of the Earth (National Geophysical Research Institute, Hyderabad); *Seminars*—Salt and By-products (Central Salt and Marine Chemicals Research Institute, Bhavnagar); Recent Trends in Chrome Tanning (Central Leather Research Institute, Madras); and Spectroscopy and Allied Subjects (Physical Research Committee).

Shri B.N. Sastri

Shri B.N. Sastri, Chief Editor, Publications & Information Directorate, CSIR, New Delhi, has proceeded on leave from October 11, 1963 preparatory to retirement.

Shri Ballapinni Nanjunda Sastri (*b.* Dec. 5, 1905) was educated at the Central College, Bangalore and obtained the B.Sc. degree of the Mysore University in 1925. Later, he joined the Indian Institute of Science, Bangalore where he carried out research in biochemistry leading to the Associateship of the Indian Institute of Science (1927) and award of M.Sc. degree (1928) of the Bombay University. During 1930-32, he worked as a Research Biochemist at the Tea Research Institute, Ceylon. In 1932, he joined the Indian Institute of Science, Bangalore where he worked as Lecturer in Biochemistry till 1942. During this period he was also associated with *Current Science*—the first science news journal in India—as secretary and publisher. Shri Sastri has published over 40 research papers in enzyme chemistry, plant physiology and plant products.

His association with the Council of Scientific & Industrial Research dates back to 1942 when he was

(*Contd on p. 4, col. 1*)

BRIEFS

Research in Surface Coatings

A two-day conference on Research in Surface Coatings was held at the Regional Research Laboratory, Hyderabad, on September 16 & 17, 1963 to consider the programme of research and developmental work in the field of surface coatings and suggest new lines of research work that could be undertaken in the different laboratories in India keeping in view the requirements of surface coatings industry in the country. More than forty delegates representing the Paint Panel, paint industry, research laboratories and government departments attended the conference, which was opened by Dr G.S. Sidhu, Deputy Director-incharge of the Laboratory. A message from Dr S. Husain Zaheer, Director-General, Scientific & Industrial Research, wishing the conference success was read out by Dr J.S. Aggarwal, Assistant Director of the Laboratory; the introductory remarks of Dr Zaheer were read out by Shri Baldev Singh, Industrial Liaison & Extension Officer, CSIR, New Delhi. The following five sessions were held : (i) Policy & principles, (ii) oils, (iii) resins, (iv) solvents & pigments, and (v) paints & enamels and paint auxiliaries.

Several important recommendations on items that could be taken up for research were made in respect of media, resins, solvents and pigments. It was also decided to convene a coordinating committee to recommend and coordinate the lines of research at various laboratories in the country. The Paint Panel was requested to be the convening and administering body to implement the recommendations.

SEMINAR

A seminar on Technical Education (Leather) will be held in the middle of January 1964 at the Central Leather Research Institute, Madras.

The seminar is meant to focus the attention of all those associated with the leather industry to the following problems connected with the education and training of leather technologists: (i) proper assessment of the need for technically trained personnel by the industry ; (ii) imbalance between demand and supply of trained technicians ; (iii) traders' view of the type of training that should be imparted ; (iv) rationalisation of the standard of training imparted on an All-India basis; (v)wide gap between the number of diploma and degree holders employed by the trade; and (vi) urgent need for planning the output of diploma and degree holders and to control their ratio to serve the future needs of the country.

Abstracts and full papers to be presented should be sent by November 10, 1963 and December 10, 1963 respectively.

All communications regarding the seminar may be addressed to : Shri K.C. Shivappa, Convener, Seminar on Technical Education (Leather), Central Leather Research Institute, Madras-20.

CONFERENCE

A conference on Spectoroscopy and Allied Subjects, under the auspices of the Physical Research Committee, will be held during November 4-6, 1963 at the Department of Physics & Spectroscopy, Banaras Hindu University, Varanasi.

PERSONAL

Appointments

Dr V.V.R. Varadachari—Senior Scientific Officer : Grade I (Oceanic Research Wing), NGRI, Hyderabad (Sept. 16, 1963).

Dr H.P. Bhatnagar—Senior Scientific Officer : Grade I, RRL, Jammu (Oct. 1, 1963).

Dr G. Raj Bahri—Senior Scientific Officer : Grade I, CRRI, New Delhi (Sept. 20, 1963).

Shri P.S. Aravamadhu—Junior Scientific Officer, NGRI, Hyderabad (Sept. 19, 1963).

Shri Y. Subba Rao—Civil Engineer, NGRI, Hyderabad (Sept. 9, 1963).

Dr N.B. Desai—Pool Officer, NCL, Poona (Sept. 19, 1963).

Promotions

Dr Mansa Ram, Junior Scientific Officer, N C L, Poona — Senior Scientific Officer : Grade II, RRL, Jammu (Sept. 20, 1963).

Shri V.M. Bhuchar—Senior Scientific Officer : Grade II, NPL, New Delhi (Sept. 2, 1963).

Dr (Miss) S.B. Kulkarni, Senior Scientific Officer : Grade II & Shri R.V. Kulkarni, Workshop Superintendent, NCL, Poona, left for U.K. for training under the Colombo Plan (Sept. 6 & 24, 1963 respectively).

Shri A.N. Kumar, Senior Scientific Officer : Grade II, NAL, Bangalore, returned on Sept. 23, 1963 after a year's training in aeronautical establishments in U.K. and the Continent.

Dr V. Narasimhan, Senior Scientific Officer : Grade I, CBRI, Roorkee, has been recognised as a supervisor for guiding research scholars for the Ph. D. degree of the Banaras Hindu University.

Shri K.L. Kapoor, Senior Scientific Assistant, CBRI, Roorkee, has been elected an Associate Member of the Indian Institute of Architects.

Shri G.S. Mehrotra, Senior Scientific Assistant, CBRI, Roorkee, has been elected a Fellow of the (i) Geological Mining & Metallurgical Society of India and (ii) Palaeontological Society of India.

Dr A. Lahiri, Director, CFRI, Jealgora, has been appointed a director of the National Coal Development Corporation, Ranchi.

Dr M.L. Dhar, Director, CDRI, Lucknow, has been nominated a member of the Emergency Medical Research Committee and Advisory Committee on Basic Medical Sciences & Indigenous Drugs of the Indian Council of Medical Research (ICMR).

Shri B.S. Kesavan, Director, Insdoc, New Delhi, has been nominated a member of the Indology Bibliography Committee of the National Library, Calcutta.

Prof. P.S. Gill, Director, CSIO, Chandigarh, has been nominated a member of the Expert Committee of the Ministry of Scientific Research & Cultural Affairs to examine the contents of the courses in Applied Physics at various institutions and to suggest modifications.

Dr I.C. Chopra, Deputy Director, RRL, Jammu, has been nominated a member, Board of Directors, Hindustan Insecticides Ltd., Delhi.

(Contd on p. 4, col. 2)

RESEARCH IN PROGRESS

National Laboratories

NAL, BANGALORE

1-ft × 1-ft Trisonic Wind Tunnel—Investigations on the design, engineering and operational aspects of the 1-ft × 1-ft trisonic wind tunnel have been completed and fabrication of its components is in progress.

The tunnel, which is expected to be assembled and commissioned during 1964, will cover the trisonic range of Mach numbers from 0.5 to 3.5 and can be operated either from the main NAL air receiver system of 97,000 cu. ft capacity or the auxiliary air receiver of 10,000 cu. ft capacity, at a storage pressure of 150 p.s.i.g.

NAL, Bangalore—1-ft Trisonic wind tunnel component under fabrication

CBRI, ROORKEE

North-light Factory Roofs in the Tropics—Investigations were carried out to compute the expected level of illumination on the working plane of large-sized factories employing north-light roofs from known values of external solar illumination. The theoretical derivations were verified by measurements taken in scaled models under the natural sky. The influence of the reflection coefficients of roof and ceiling surfaces as well as the size of the openings on the work plane illumination was extensively studied and it was found that north-light openings provide adequate shadow-free illumination. A very interesting relationship was found to exist between the optimum uniform illumination on the work plane, the size of the north-light opening and the corresponding bay width in the case of saw tooth roofs. Field measurements in factories confirmed these conclusions.

CBRI, Roorkee—Factory model under natural sky

The two significant parameters for north-light design are : (i) the amount of daylight required on the working plane and (ii) the height of the penetration above it. The former is determined by the nature of the work and the latter by the size of the machinery employed. The correct dimension of the opening and the corresponding width of the bay to get the most uniform illumination can be readily obtained from the data available at the Institute for proposed factories where the distance between the rows of north-light may extend up to 60 ft and the work plans are located up to 40 ft below the fenestration—V. NARASIMHAN & B.K. SAXENA.

CFTRI, MYSORE

Deodorization of Refrigerator Railway Vans—Refrigerator railway vans used for transport of fish return empty to their stations of origin as they cannot be used for transport of other foods on the return journey. Hence, the possibility of deodorising the vans and using them for transport of perishables during the return journey was investigated at the instance of the Development Council for Food Processing Industries, Ministry of Commerce & Industry.

Experiments conducted on deodorisation of ice boxes used for keeping fish in the laboratory have indicated a workable schedule for effecting deodorisation. These experiments were tried on fish-carrying refrigerated railway vans at Madras and finally a method of ridding the vans completely of fish odour has been evolved. The method consists in cleaning the van, spraying it with an aqueous solution of bleaching powder (200 p.p.m. chlorine) on all surfaces, sweeping out the water after a contact time of 30 min., and spraying sodium dithionate solution of an equivalent strength.

To test the efficacy of the process, samples of market butter packs were kept in the treated refrigerator van overnight and compared with fresh samples. No fish smell was preceptible in the samples. The feasibility of using the refrigerator van was further confirmed by carrying limes on the return journey from Madras to Calicut.

(Contd from p. 1, col. 3)

appointed first Editor of the *Journal of Scientific & Industrial Research*. During 1946-49, Shri Sastri taught history of science and scientific method in the Delhi University in addition to his duties as Editor. He was appointed in 1949 Chief Editor in charge of the Dictionary of Economic Products of India as well as the Journal. With the creation of the Publications Division in 1951, Shri Sastri has been in overall charge of all the publications of the Directorate.

It is largely due to Shri Sastri's endeavour that the journal during the last two decades had made phenomenal progress — from a quarterly started in 1942, the journal today is being published under four distinct subject titles besides the original journal. He has been responsible for the starting of three other periodicals—*CSIR News* in 1951, *Vigyan Pragati* in 1952 and *Research & Industry* in 1956. Under his editorial scrutiny five volumes of the *Wealth of India : Raw Materials* (II-VI), four parts of *Wealth of India : Industrial Products* (II-V) and botanical monographs and a large number of other publications like symposia proceedings, reports and bulletins have been published. Many of the publications have received wide appreciation.

Shri Sastri has served the Indian Standards Institution in various capacities—as member of the Documentation Sectional Committee; and as convener, Books & Periodicals Sub-Committee. He has also been a member of the Publications Committee of the Planning Commission, and member, Editorial Board for the publications of the Delhi Library Association. At the request of the Organization for the Economic Co-operation and Development, Paris, Shri Sastri has been contributing digests for the *Technological Digests* published by the Organization.

Shri Sastri is an Associate of the Royal Institute of Chemistry and Fellow of the Indian Academy of Sciences. In recognition of his pioneering efforts in the field of dissemination of scientific information, he was elected in 1962 a Fellow of the Institute of Information Scientists, U.K.

PATENTS

Filed

87849 : *Novel aralkyl propionomides of pharmacological interest*—Y.S. Sadanandam, K. Bhanumati, P.B. Sattur, G.S. Sidhu & S. H. Zaheer, RRL, Hyderabad.

89536 : *Improvements in or relating to the manufacture of fruit and vegetable preserves*—B. S. Ramachandra & S .S. Kalbag, CFTRI, Mysore.

90039 : *Novel heterocyclic amides and processes for their preparation*—S.B. Moray, M. Mazharuddin, G. Thyagarajan & G.S. Sidhu, RRL, Hyderabad.

90057 : *Improvements in or relating to electric incandescent filament lamps*—Atma Ram, B.M. Bishui & Jagadish Prasad, CGCRI, Calcutta.

90058 : *Improvements in or relating to focussing devices for projection lamps in paraboloidal or like shaped reflectors*—B.M. Bishui & Jagadish Prasad, GGCRI, Calcutta.

90092 : *Improvements in or relating to fire retardant paints*—S.B. Roy & D.B. Gupta, CGCRI, Calcutta.

90113 : *Improvements in or relating to a process for the metallisation of nonconductors*—S. B. Roy, S. S. Mandal & H. D. Sarcar, CGCRI, Calcutta.

945.171 (France) & 37928 (Italy) : *An inexpensive chemical method of dicing a semiconductor slice for the manufacture of transistor family device*—K.S. Balain, CEERI, Pilani.

Accepted

79597 : *Improvements in a continuous vertical counter-current solid-gas reactor*—M.J. Shahani, NML, Jamshedpur.

Sealed

76416 ; *A process for the production of efficient fuel from lignite and anthracitic coals having high ash content*—D.K. Rao, D.P. Agrawal, K.S. Rao, M.G. Krishna & S.H. Zaheer, RRL, Hyderabad.

78418 : *Preparation of barium sodium chromate and barium potassium chromate*—R. Farooqi, D.S. Datar & S.H. Zaheer, RRL, Hyderabad.

76682 : *A process for the recovery and purification of anthracene, carbozolene and phenanthrene and allied chemicals from coal tar fractions in highly concentrated or pure state*—D.K. Sen, C.S.B. Nair, A.N. Basu & A. Lahiri, CFRI, Jealgora.

78016 : *Improvements in the production of thermo-setting resins*—R.T. Thampy & N. Krishnan, Shri Ram Institute for Industrial Research, Delhi.

PERSONAL

(Contd from p. 2, col. 3)

DR G.S. SIDHU, Deputy Director-in-charge, RRL, Hyderabad, has been nominated a member of the Advisory Board of Research of the Forest Research Institute and Colleges, Dehra Dun.

DR S.H. ZAIDI, Deputy Director, DR C.R. KRISHNAMURTI & DR S.N. PRADHAN, Assistant Directors, CDRI, Lucknow, have been nominated members respectively of the Occupational Health Expert Group, Tuberculosis Expert Group and Pharmacology Expert Group of ICMR.

SHRI G.D. JOGLEKAR, Assistant Director, NPL, New Delhi, has been nominated a member of the Cinema Advisory Committee, Ministry of Industry.

* * *

SHRI DIPAK HALDER, Senior Scientific Assistant, IIBEM, Calcutta, has been awarded the D. Phil. (Sc.) degree of the Calcutta University for his thesis : *Studies on the action of some antibiotics on vibrio-cholera.*

Correction

In the news item 'Cellular Roofing Units' (*CSIR News*, Vol. 13, No. 16, p. 3), the fourth line of the second para should read as : nominal reinforcement of 20 SWG.

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CSIR NEWS

VOL. 13 NOV. 11, 1963, AGRAHAYANA 20, 1885 No. 21

DIRECTORS' CONFERENCE

A three-day conference of heads of national laboratories and cooperative research associations was held at the National Metallurgical Laboratory, Jamshedpur during Oct. 30-Nov. 1, 1963. Inaugurating the conference, Dr S. Husain Zaheer, Director-General, Scientific & Industrial Research, stressed the vital role of the national laboratories in the scientific and industrial development of the country and pleaded for efficient coordination and greater effort in achieving the objectives set forth for each laboratory.

Dr B.R. Nijhawan, Director of the Laboratory, welcomed the delegates to the conference which was attended by more than 30 heads of national laboratories and cooperative research associations.

Self-sufficiency in Electronics

A conference on *Achievement of Self-sufficiency in Electronics* will be held on December 9 & 10, 1963 at the Central Electronics Engineering Research Institute, Pilani (Rajasthan). There will be three sessions devoted to the following topics : (i) Fixation of objectives and priorities, (ii) Relative roles of foreign collaboration and indigenous development, and (iii) Integrated national effort towards self-sufficiency.

Abstracts of papers to be presented should be sent by November 19, 1963. Enquiries regarding the conference may be addressed to the Director of the Institute.

Scientific Documentation Course

A six-week Regional Training Course in Scientific Documentation for Asia, organised under the joint auspices of Unesco, International Atomic Energy Agency and Insdoc, was inaugurated by Prof. Humayun Kabir, Minister for Scientific Research & Cultural Affairs and Vice-President, CSIR, on October 21, 1963 at the National Physical Laboratory, New Delhi. Dr S. Husain Zaheer, Director-General, Scientific & Industrial Research, presided. Thirty-three Indian and foreign trainees from Ceylon, Indonesia, Korea, Malaysia, Nepal, Pakistan and Thailand are attending the course, which will last till November 30, 1963.

Dr Bjorn Tell, AB Atom Energi, Sweden and Dr H. Coblans, Head of the Scientific Information Service, C E R N, Cern (Geneva), have been invited by Unesco to deliver lectures at this course. Some leading librarians in the country and staff of Insdoc are also giving lectures.

A reprography exhibition has been organised concurrently with the course.

P E R S O N A L

Appointments

Dr K. S. M. Sastry—Senior Scientific Officer : Grade II, RRL, Jammu (Oct. 21, 1963).

Dr J.K. Bewtra & Shri J.S. Jain—Senior Scientific Officers : Grade I, CPHERI, Nagpur (Sept. 13 & 25, 1963 respectively).

Shri K. Venkataraman, Under Secretary, CSIR, New Delhi, has been appointed Manager of the Publications Directorate with effect from November 7, 1963. He will look after the duties of both the Under Secretary (Publications) and Chief Editor.

Promotion

Shri M.V. Srinivasan, Junior Scientific Officer—Senior Scientific Officer, Grade II, CPHERI, Nagpur (Sept. 16, 1963).

Resignations

Dr P.K. Sarkar, Junior Scientific Officer, CMRS, Dhanbad (Nov. 8, 1963).

Shri A.D. Joshi, Engineer Officer, CSIR Secretariat, New Delhi (Oct. 31, 1963).

* * *

Shri B. S. Kesavan, Director, Insdoc, New Delhi, has been elected a Vice-President of the International Federation for Documentation (FID) for the period 1964-66. He attended the FID Conference held at Stockholm during September 30-October 6, 1963 and visited the National Lending Library at Boston, Spa (U.K.).

Dr Y.V.G. Acharya, Assistant Director, N A L, Bangalore & Coordinator for Low-speed Aero-

(*Contd on p. 2, col. 3*)

Dr S. H. Zaheer inaugurating the Directors' Conference

BRIEFS

Central Road Research Institute New Delhi

This is the title of an illustrated brochure (pp.16) published by the Institute and contains a brief history of the Institute, its functions & scope and achievements. Information on the technical services rendered by the Institute and other related matters is also included.

Prefabricated Timber Hut

A booklet entitled *Manual of Instructions for Construction of Prefabricated Timber Hut* has been published by the Central Building Research Institute, Roorkee. With the aid of 15 line drawings, 6 photographs and 4 appendices, the publication describes briefly the design of the collapsible timber hut and its components, dismantling and repacking of the components, local materials, adaptations, improvisation, fittings and electrification.

RRL, Hyderabad Report

The Annual Report of the Regional Research Laboratory, Hyderabad for 1962-63 has been published. The report (pp. 99) summarises the work of the Laboratory during the year under the following heads : Oils & fats, Surface coatings & pigments, Organic chemistry, drugs & pharmaceuticals, Essential oils & aromatic chemicals, Hand-made paper and cellulose, Entomology, Biochemistry, Coal, Heavy Chemicals & fertilizers, Ceramics, X-ray & physicochemical studies, Industrial water & analytical chemistry, Chemical engineering, General engineering and Operational research, technical information & liaison. There are six appendices which include, among others, research & review papers published and patents taken by the Laboratory.

National Metallurgical Laboratory Jamshedpur

A 48-page illustrated brochure bearing the above title has been published. The publication gives a brief history of the Laboratory, its scope and functions and an account of the outstanding results of investigations. Information on practical demonstrations, project reports, translation service, publications, patents, process and symposia is also included.

Experiment Stations

CFTRI [redacted]

The Regional Research Stations set up by the Central Food Technological Research Institute, Mysore, have been redesignated Experiment Stations.

NAL, Bangalore

The National Aeronautical Laboratory, Bangalore, has been recognised by the Banaras Hindu University as a centre for research leading to the Ph.D. degree.

New Research Schemes

The following new research schemes have been sanctioned for 1963-64 :

Cultivation of medicinal & aromatic plants at the Drug Farm of the Panjab University—Dr C. K. Atal, Department of Pharmacy, Panjab University, Chandigarh.

Exact model experiment to simulate conditions encountered when applying electromagnetic methods to problems of engineering and prospecting—Dr V.K. Gaur, Department of Geology & Geophysics, Roorkee University, Roorkee.

Histophysiological studies on the red and white muscles of fishes—Dr J.C. George, Department of Zoology, M.S. University of Baroda, Baroda.

Anatomy—Study of Polyporaceae—Dr S.R. Bose, R.G. Kar Medical College, Calcutta (Retired Scientists' Scheme).

PERSONAL

(Contd from p. 2., col. 3)

dynamics, Commonwealth Advisory Aeronautical Research Council left for Australia on October 15, 1963 to attend the meetings on High-speed and Low-speed Aerodynamics (Oct. 9-23, 1963) at various aeronautical centres in Australia.

The Director (or his nominee), CFTRI, Mysore & SHRI M. A. GHANI, Senior Scientific Officer, CLRI, Madras, have been nominated co-opted members of the Technological Research Sub-Committee of the Indian Central Arecanut Committee, Ministry of Food & Agriculture.

DR I. C. CHOPRA, Deputy Director, RRL, Jammu, has been nominated a member of the Medicinal Plants and Minor Crops Committee of the Indian Council of Agricultural Research.

DR RAM PRASAD, Assistant Director, NPL, New Delhi, has been nominated member of the Electronic Equipment Sectional Committee, Radio Receivers Sub-

(Contd on p. 4, col. 3)

Insdoc, New Delhi—Prof. Humayun Kabir inaugurating the Regional Training Course in Scientific Documentation

RESEARCH IN PROGRESS

National Laboratories

CFRI, JEALGORA

Sulphur Recovery Process—A two-stage autothermic process using a continuous moving bed has been developed for the recovery of elemental sulphur along with sulphur dioxide from pyrites. In the first stage, the labile sulphur present in pyrites is distilled off and in the second, the pyrrohotite (FeS) formed is oxidised. Recovery trials on Amjhore pyrites (sulphur content, 40%) using the process gave an yield of 75 per cent elemental sulphur (on the basis of total labile sulphur) and 22 per cent sulphur converted to sulphur dioxide (on the basis of pyrites).

As the entire requirement of sulphur for the manufacture of sulphuric acid, pharmaceuticals and other chemicals is being presently met by import, commercial exploitation of this process is expected to save considerable amounts of foreign exchange.

CBRI, ROORKEE

Double Under-reamed Piles for Foundations in Black Cotton Soils—Cracking of buildings in black cotton soil areas due to foundation movement is quite common. Under-reamed pile foundation has provided an economical and foolproof solution to this problem. The principle of the under-reamed pile foundation is to anchor the building by means of under-reamed piles at a depth of about 12 ft (where ground movements are negligible) and casting a plinth beam which rests on the piles, clear of the ground for supporting the super-structures.

Single under-reamed piles are generally used for single and double storeyed buildings. The load-carrying capacity of single under-reamed piles is however not sufficient for multi-storeyed and factory buildings. Hence, the Institute has introduced double under-reamed piles, whose bearing capacity is about 50 per cent greater than that of the single under-reamed piles. The additional cost of double under-reaming is low as compared to the increased benefits derived from their higher bearing capacity.

A double under-reamed pile is a cast *in situ* bored pile under-reamed at two depths along its stem, one at 8 ft and the other at 12 ft. The increase in bearing capacity is due to two factors, (i) increase in surface area which offers frictional resistance to the pile, and (ii) mobilisation of the almost full value of the shearing resistance of the soil which, in the case of normal bored piles in clays, is reduced by nearly 50 per cent.

A series of pile load tests were carried out in the field and the results were comparable with the theoretical values.

CSMCRI, BHAVNAGAR

Granulated Sodium Chloride—A process for the preparation of hard, free-flowing granulated sodium chloride from edible salt obtained from marine and sambhar lake sources has been worked out. It consists in granulating salt (moisture content, 10%) in an oscillating granulator to get granules of 18-30 B.S. mesh size (approximating to table salt). The granules are then treated with 0.5-1.0 per cent magnesium carbonate (anti-caking agent) and dried—B.P. CHAUDHARY & K. SESHADRI.

Sponsored Research

Earthquake Engineering—A large vibration table which can take earth dam models or a large size model of a building or a tower or a number of small models for simultaneous testing has been designed and built.

Model of a 4-storeyed frame under test on a shaking table

A theoretical investigation on the behaviour of multi-storeyed reinforced cement concrete (RCC) frames has been completed. A four-storeyed, single-bay, RCC frame with a model ratio of 1:4 was tested on a vibration table. Free vibration tests carried out to determine the period showed that the experimental values for the period compare favourably with the theoretical ones—School of Research & Training in Earthquake Engineering, Roorkee University, Roorkee.

Research Papers

M. PANCHOLY & S.S. MATHUR (NPL, New Delhi)—Adiabatic compressibility and ultrasonic velocity in esters. *J. phys. Soc. Japan*, **18** (1963), 449.

M. PANCHOLY & S.S. MATHUR (NPL, New Delhi)—Frequency and temperature variation of ultrasonic absorption in esters. *Acustica*, **13** (Part 1), (1963), 42.

K. NARAYANAN & S.K. RANGARAJAN (CECRI, Karaikudi)—Faradaic admittance and migration in the diffuse double layer : Effect on the phase angle. *Austr. J. Chem.*, **16** (1963), 565.

A. KRISHNAN & S. NAGABHUSHANA (NAL, Bangalore)—Drift reduction in d.c. amplifiers. *Electron. Engng*, **35** (1963), 614.

J.S. SHARMA, S. CHAND & H.V. MIRCHANDANI (CBRI, Roorkee)—Thermal insulation and waterproofing of shell roof—*Indian Concr. J.*, **37** (1963), 343.

S.M. SINGH (CBRI, Roorkee)—Effect of extenders on the shrinkage cracking of cement paint film. *Paintindia*, **13** (4) (1963), 30.

R. N. KHANNA & T.R. SESHADRI (Delhi University, Delhi)—Pongaglabrone, a new component of the seeds of *Pongamia glabra* : its constitution and synthesis. *Tetrahedron*, **19** (1963), 219.

R. ANEJA, R.N.KHANNA & T.R. SESHADRI (Delhi University, Delhi)—6-Methoxyfuroflavone, a new component of the seeds of *Pongamia glabra*. *J. chem. Soc.*, (1963), 163.

PERSONAL

(Contd from p. 2, col. 3)

Committee and the Electronic Measuring Sub-Committee of the Indian Standards Institution (ISI).

SHRI M. R. VERMA, Senior Scientific Officer : Grade 1, NPL, New Delhi, has been nominated member of the Panel for Raw Materials, Inks and Allied Industries of ISI.

DR J. S. AHLUVALIA, Assistant Director, IIP, has been nominated a member of (i) the committee constituted by the Ministry of Mines & Fuel to go into the question of utilization of surplus natural gas and development of petrochemical industries in Assam State and (ii) the working group of the Ministry to examine the economic feasibility of the Bombay-Poona product pipeline.

SARVASHRI ISHWAR CHANDRA & A. VENKATESH, Junior Scientific Officers, IIP, have been nominated principal and alternate members respectively of the Liquefied Petroleum Gases Sub-Committee of ISI.

* * *

SHRI J.S. SHIRKE, who worked on CSIR research scheme at the Physical Research Laboratory, Ahmedabad, has been awarded the Ph. D. degree of the Gujarat University for his thesis : *Investigations on the physics of the ionosphere over Ahmedabad.*

Dr I.K. Kacker

Dr Indra Kishore Kacker, Senior Scientific Officer : Grade I, Regional Research Laboratory, Hyderabad, has been appointed on promotion Assistant Director with effect from September 6, 1963.

Shri Kacker (*b.* 1923, Lucknow) received his early education in Sitapur (Uttar Pradesh), and after a brilliant academic record obtained the M.Sc. degree in organic chemistry from the Lucknow University in 1945. He started his career in 1946 at the Chemical Laboratories (CSIR), Delhi and worked on a variety of industrial problems. In 1949 he joined the Central Laboratories for Scientific & Industrial Research, Hyderabad as Scientific Officer. Shri Kacker was awarded the Ph.D. degree by the Lucknow University in 1955 for his studies on the *Synthesis of potential analgesics.*

During 1955-56, Dr Kacker proceeded to West Germany on an Alexander von Humboldt scholarship for studying the latest methods and techniques employed in the field of synthetic organic chemistry and visited various pharmaceutical industries in that country.

Dr Kacker was promoted as Senior Scientific Officer : Grade I, in 1957. He was deputed to work with the Indian Drugs and Pharmaceuticals Ltd, Hyderabad during 1961-62.

Dr Kacker's fields of study include medicinal chemistry, drugs and dye intermediates and cellulose chemistry. He has a number of research papers and patents to his credit. One of the compounds synthesised by him is now in clinical use as a hypnotic in several countries including India.

PATENTS & PROCESSES

Patents Filed

90112 : *Preparation of anion exchange resins from tar acids, phenols, cresols and the like*—J.N. Bhaumik, P. N. Mukherjee, S. K. Mallick & A. Lahiri, CFRI, Jealgora.

90238 : *A microscope eye-piece graticule for rapid determination of projected specific surface of particulate materials*—S. Guruswamy, CMRS, Dhanbad.

JAPAN

44228/63 : *Improvements in or relating to the dicing of silicon, germanium and like semi-conductor materials to prepare small size dices for the manufacture of transistor family devices*—K.S. Balain, CEERI, Pilani.

Patents Accepted

80742 : *A process for the production of diesel fuel from low temperature coal tar or fractions thereof* – B.S.N. Rao, K.M. Murad, R. Vaidyeswaran, A.V. Ramaswamy, M.G. Krishna & S.H. Zaheer, RRL, Hyderabad.

81402 : *Improvements in or relating to electrodeposition of metals, particularly manganese, by direct current electrolysis of aqueous solutions containing metal ions*—T. Banerjee & N. Dhananjaya, NML, Jamshedpur.

PROCESS

Bitumastic Jointing Compositions—These are used for filling up the expansion-contraction joints in concrete slabs, floors, roadways and air-fields and for making bituminous and tar mastics. These compositions should have good elasticity and low susceptibility to temperature variations. Compositions making use of linseed oil or other drying oils, castor oil vulcanised with sulphur and mixed with bitumen, etc., generally used for the above purposes, lack elasticity and resilience after weathering.

A process for the preparation of satisfactory jointing compositions (Indian Pat. 54074), using the indigenously available raw materials, castor oil gel, asphaltic bitumen, brick dust and sand, has been developed at the Central Road Research Institute, New Delhi.

The process consists in mechanically stirring the ingredients at elevated temperatures till a thoroughly dispersed mass is obtained. The plant and machinery required for the process, such as industrial electric stirrer, steam jacketed paddle mixer, pulveriser, are available in the country. The new composition which conforms to I.S. 1834, is economical, durable and can be conveniently prepared at site. Further, the making and laying of the composition is simple in operation and its properties can be changed according to the requirement by suitably changing the proportion of the ingredients.

Preliminary trials of the composition carried out on the Delhi-Faridabad road have been successful. The capital outlay for a plant producing 500 kg. of product per day is estimated at Rs 35,000. The process can be taken up as a small scale industry and can be undertaken with advantage by industries dealing with tar and bituminous work.

Parties interested in undertaking the commercial development of the process may correspond with : Executive Director, National Research Development Corportion of India, Mandi House, Lytton Road, New Delhi-1.

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R. N. 4212/5

CSIR NEWS

VOL. 13 NOV. 25, 1963, AGRAHAYANA 4, 1885 No. 22

NEW VICE-PRESIDENT MEETS CSIR OFFICERS

Shri M.C. Chagla, who took charge as Union Minister of Education on Nov. 21, 1963, and Prof. Humayun Kabir, the out-going Minister, met the officers and staff of the Council of Scientific & Industrial Research on Nov. 22, 1963 at the CSIR Secretariat, New Delhi.

Shri A.J. Kidwai, Secretary, CSIR, paying a tribute to the services of Prof. Humayun Kabir, who has been Vice-President of the Council for the last 5½ years, said that Prof. Kabir became identified with the scientific work of the country. Welcoming the new Vice-President, Shri Kidwai referred to the former's inspiring personality and offered the co-operation of one and all in his honorous duties.

In a brief farewell speech, Prof. Humayun Kabir emphasised the role of science in the national development and, in this connection, observed that the national laboratories have made significant contribution both in the fundamental and applied aspects of science.

Addressing the officers, Shri Chagla said that the most important duty of the scientist is to see that science serves the national purpose in fighting poverty and raising the standard of living. Praising the high calibre of the Indian scientist, he stressed the need for team work in scientific research.

Fifth Technological Conference

The Fifth Technological Conference sponsored jointly by the three textile research associations—Ahmedabad Textile Industry's Research Association, Ahmedabad; Bombay Textile Research Association, Bombay; and South India Textile Research Association (SITRA), Coimbatore—will be held at SITRA, Coimbatore during December 5-7, 1963. The conference will be inaugurated by Shri M. Bhaktavatsalam, Chief Minister of Madras, on December 5, 1963 at 10.00 a.m.

A number of research and educational organisations connected with textiles, such as the Indian Central Cotton Committee, Technological Laboratory, Bombay; Department of Chemical Technology, Bombay; Victoria Jubilee Technical Institute, Bombay; and Textile & Allied Research Organisation, Baroda; will also take part. A large number of delegates connected with the textile industry from all over India are expected to attend the conference in which as many as 20 papers relating to spinning, weaving, textile physics and textile chemistry will be presented.

Shri A.J. Kidwai, Secretary, CSIR, welcoming the new Vice-President, Shri M.C. Chagla

PERSONAL

Appointments

SHRI N. K. BUZRUK—Senior Scientific Officer : Grade II, NCL, Poona (July 22, 1963).

DR DURGADAS GANGULY—Senior Scientific Officer : Grade I, RRL, Jorhat (Oct. 17, 1963).

SHRI V. SWAMANATHAN—Junior Scientific Officer, CBRI, Roorkee (Nov. 4, 1963).

SHRI N. CHAKRAVORTY—Senior Scientific Officer : Grade II, NML, Jamshedpur (Nov. 5, 1963).

SHRI G. NAGARAJA RAO—Senior Scientific Officer : Grade I, NML, Jamshedpur (Nov. 13, 1963).

Promotions

SHRI V. V. DHEKNE—Junior Scientific Officer, NCL, Poona (July 22, 1963).

SARVASHRI A. K. MUKHERJEE, C.S.B. NAIR & A. K. CHAKRABORTY—Senior Scientific Officers : Grade I, CFRI, Jealgora (Aug. 22, 1963).

SARVASHRI B.S. DESHMUKH & V.A. KRISHNAMURTHY—Senior Scientific Officers : Grade I, CFRI, Jealgora (Sept. 17 & 23, 1963 respectively).

(*Contd on p. 2, col. 2*)

BRIEFS

Waste Treatment by Oxidation Ponds and Public Health Engineering Education

The symposia on Waste Treatment by Oxidation Ponds and Public Health Engineering Education were held at the Public Health Engineering Research Institute, Nagpur during October 29-31, 1963 (*CSIR News*, Vol. 13, No. 18, p. 1).

Dr D.S. Raju, Union Deputy Minister of Health, inaugurated the symposia. Thirty-three papers on Waste Treatment by Oxidation Ponds and twenty on Public Health Engineering Education were presented. About 150 Indian and foreign delegates attended the symposia. Among the prominent foreign delegates were : Dr David Duttweiler of U.S. Army, Prof. L.F. Mantilla, Regional Adviser in Sanitary Engineering, WHO, Prof. F.E. Bruce, Professor of Public Health Engineering, Imperial College of Technology, London and President of Public Health Engineering Association of Great Britain, and Dr V.M. Witt, Regional Sanitary Engineer, WHO.

The proceedings of the symposia have also been published.

VITM Planning Committee

Shri Y.N. Gangdhara Setty, Chairman, All India Manufacturers' Association (Mysore State Branch), Bangalore, has been nominated a member of the Planning Committee of the Visvesvaraya Industrial & Technological Museum, Bangalore.

CFRI Foundation Lecture

The twelfth Foundation Lecture of the Central Fuel Research Institute, Jealgora, was delivered by Prof. S.R. Palit, Professor of Physical Chemistry, Indian Association for the Cultivation of Science, Calcutta, on November 11, 1963 at the Institute. The topic of the lecture was Advances in Polymer Research.

Visits

Prof. Z. Hokao, Professor of Coal Mining, Tokyo University and Visiting Professor at the Banaras Hindu University, Varanasi, visited the Central Mining Research Station and other mining areas in Dhanbad during October 30-November 2, 1963.

A delegation from the Coal Industry of Australia consisting of Messrs Linder and Bate, Member & Chief Mining Engineer respectively. Joint Coal Board, New South Wales and Mr Androw, General Manager, Kimball Coal Co., Sydney, visited the Central Fuel Research Institute, Jealgora on November 6, 1963. The delegates discussed with the Director and senior officers of the Institute the possibility of importing Australian coking coals into India and their blending with Indian coking and noncoking coals for use in coke ovens for making metallurgical coke suitable for iron and steel industry.

Prof. Stanislav Landa, Professor of Fuel Technology, Technical University of Prague, Czechoslovakia, visited the Central Fuel Research Institute, Jealgora on November 7 & 8, 1963 and delivered a lecture on Utilization of low temperature tar, particularly as a starting material for the production of synthetic fuels by hydrogenation.

PERSONAL

(*Contd from p. 1, col. 3*)

SHRI H.C. CHAKRABORTY—Senior Scientific Officer : Grade II, CFRI, Jealgora (Aug. 22, 1963).

SHRI R. S. R. KRISHEN—Junior Scientific Officer, CFRI, Jealgora (Aug. 26, 1963).

SARVASHRI M.V.P. MENON & A. MAJUMDER—Junior Scientific Officers, CFRI, Jealgora (Aug. 22, 1963).

SARVASHRI G. SITARAMAMURTHY, N. C. SINHA, SIDDHARTHA SEN GUPTA & RUPLAL GUPTA—Junior Scientific Officers (Sept. 2, 10, 11 & 17, 1963 respectively).

SARVASHRI ASHOKE R. ROY, D.K. SEN & SUBHASIS SEN—Junior Scientific Officers, CFRI, Jealgora (Oct. 10, 1963).

SHRI J. JOGA RAO—Junior Scientific Officer, CFRI, Jealgora (Oct. 14, 1963).

* * *

DR B. R. NIJHAWAN, Director, NML, Jamshedpur, left India on Nov. 8, 1963 on deputation for presiding over the Technical Session of the Unesco Inter-regional Symposium on 'Application of Modern Technical Practice in the Iron & Steel Industry in the Developing Countries' to be held at Prague and to participate in the concluding sessions to be held in Geneva. He will also visit West Germany, U.K. and France.

DR V.S. RAMACHANDRAN, Senior Scientific Officer : Grade II, CBRI, Roorkee, attended the Twelfth National Conference of Clay Minerals held at Atlanta, Georgia (Sept. 30-Oct. 4, 1963) and presented a paper (in collaboration with Shri K.P. Kacker of the Institute) entitled Mechanism of thermal decomposition of dye-clay mineral complexes.

* * *

DR B. C. SUBBA RAO, Senior Scientific Officer, NCL, Poona, has been elected a Fellow of the Royal Institute of Chemistry, London.

SHRI P. V. KRISHNAN, Senior Scientific Assistant, CBRI, Roorkee, has been admitted as an Associate Member of the Acoustical Society of America.

DR K. VENKATARAMAN, Director, NCL, Poona, has been nominated a member of the Reorganisation Committee for the Haffkine Institute, Bombay.

DR A. LAHIRI, Director, CFRI, Jealgora, has been nominated a member of the Planning Group on Coal, Ministry of Mines & Fuel.

DR Y. NAYUDAMMA, Director, CLRI, Madras, has been nominated a member of the Export Inspection Council of the Ministry of International Trade.

DR M.L. DHAR, Director, CDRI, Lucknow has been nominated a member of the State Council of Scientific & Industrial Research, U.P.

The following officers of the Central Food Technological Research Institute, Mysore, have been nominated member of the various committees (noted against the names) of the Indian Council of Agricultural Research : Director or his nominee (Annual Nutrition Committee); DR N.L. LAHIRY, Assistant Director (Poultry Committee); DR D.S. BHATIA, Assistant Director (Tuber Crops Commodity Committee); SHRI M.R. CHANDRASEKHARA & DR H.S.R. DESIKACHAR, Senior Scientific Officers : Grade I, (Dairy Science Committee and Rice Commodity Committee respectively); and SHRI G.S. BAINS, Senior Scientific Officer: Grade II (Cereals & Pulses Committee).

DR. G.J. MOHANRAO Assistant Director, CPHERI, Nagpur has been nominated convener of the Sugar & Distillery Industry Wastes Panel and Plating Industry Wastes Panel of ISI.

RESEARCH IN PROGRESS

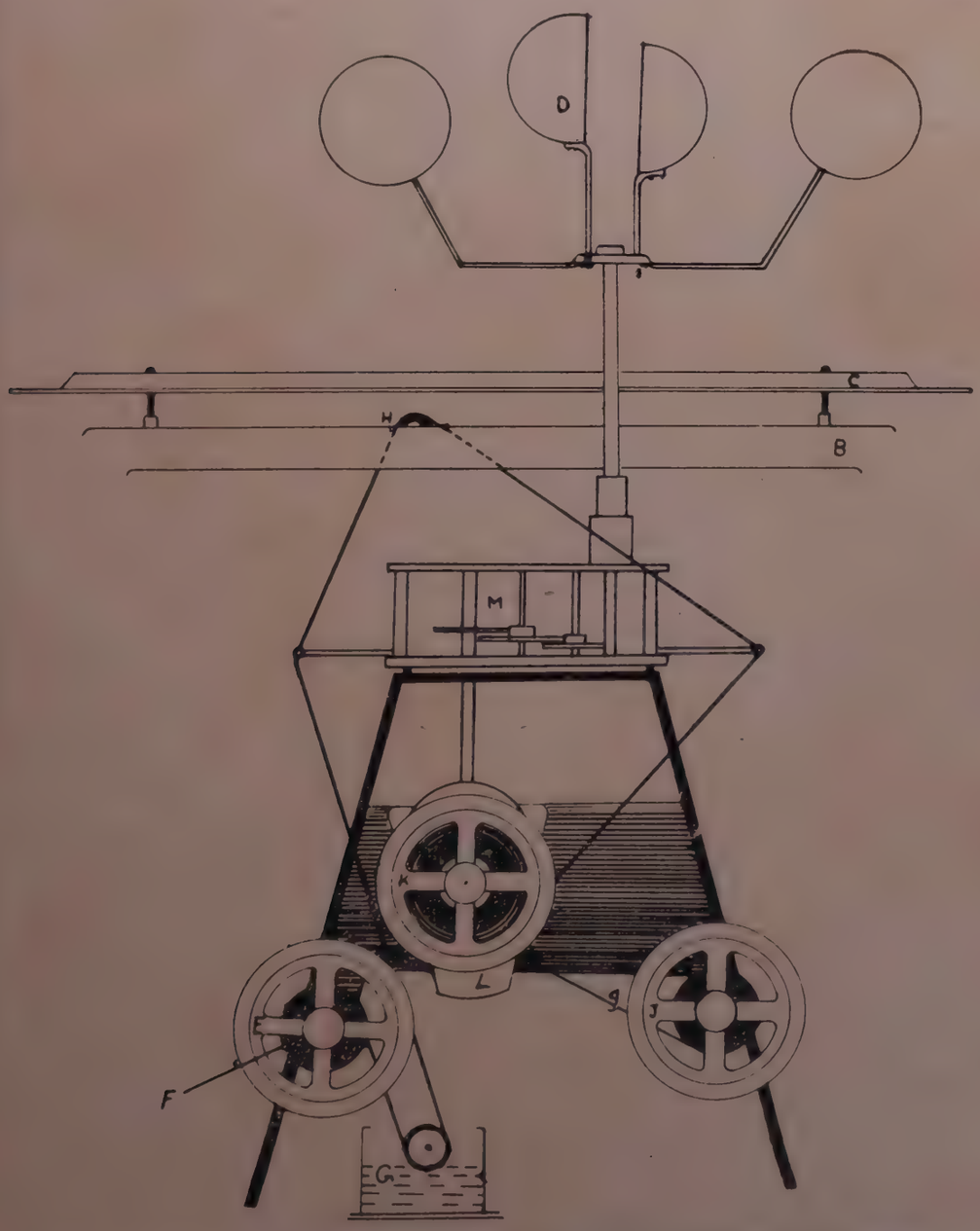
National Laboratories

NML, JAMSHEDPUR

Beneficiation and Pelletization of Goa Iron Ore Fines—Beneficiation studies on samples of 10 tons of iron ore fines from the Pale mine (Goa), assaying Fe, 60.5; SiO_2, 4.53; Al_2O_3, 3.91; P, 0.07; and loss on ignition, 4.47 per cent, have shown that by washing and cyclone treatment a concentrate assaying Fe, 64.3; SiO_2, 2.76; Al_2O_3, 2.25; P, 0.05; and loss on ignition, 3.56 per cent, with a recovery of 93.6 per cent iron can be obtained. Comprehensive studies on the pelletization of the concentrated ore fines showed that green pellets of the optimum grind of the concentrate when fired at 1300-30° C. could produce a product (assaying, Fe, 66.67; FeO, 2.12; SiO_2, 2.96; Al_2O_3, 2.33; CaO, 0.13; MgO, 0.13; P, 0.05; & S, 0.12%) capable of withstanding long distance transport and suitable for blast furnace smelting.

NBG, LUCKNOW

Apparatus for Automatic Collection of Atmospheric Pollen and Spores—As a survey of atmospheric pollen and spores is very helpful in studying problems relating to human allergies, agriculture, forestry, palaeobotany, etc., an apparatus for the automatic collection of atmospheric pollen and spores has been designed and fabricated. The apparatus comprises a box (B) with a raised shelter (C) overhung by a four-cup anemometer (D). Inside the box are contained a wheel with a roll of alkathene tape (*c.* 100 m. long and 1.5 cm. wide) the free end of which is passed between two closely placed rollers fitted in a container (G) carrying an adhesive (glycerine with some phenol to prevent fungal growth) and then over a roller at the roof of the box. The adhesive-coated surface is closed by another tape coming from a second wheel (J), the double tape being wound round a third wheel (K) and finally fixed on the central axle of a clock (L). The anemometer, attached to a series of five gears, winds the main spring of the clock—P.K K. Nair & K.N. Kaul.



NBG, Lucknow—Pollen and spores collection apparatus fabricated by the Garden

NAL, BANGALORE

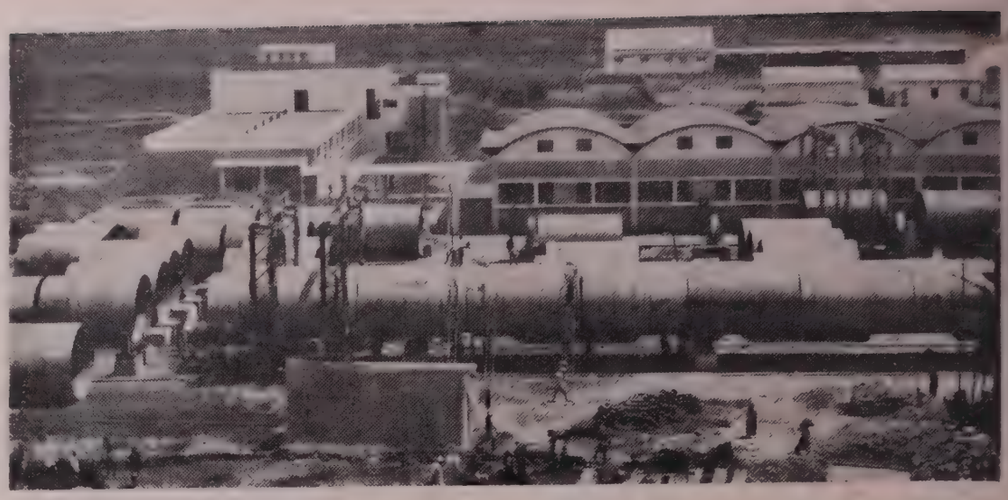
Unitary Compressed Air Storage System – This is used for operating a number of high-speed wind tunnels and test rigs of aerodynamics and gas-dynamics laboratories. Investigations have shown that a total capacity of 100,000 cu. ft (2,831,700 litres) of air at a pressure of 150 p.s.i.g. (10.55 kg./sq. cm. gauge) is required for 1-ft and 4-ft trisonic wind tunnels and other aerodynamic facilities. Based on these calculations, a design for the unitary compressed air storage system has been worked out.

The main air receiver complex comprises four main fusion-welded cylindrical steel receivers, each 240 ft long and 12 ft diam. in a series-parallel arrangement, the two outer ones being respectively connected in series with the two inner ones which connect up through a 'Wye'-junction. Conical ends of special design have been provided as dish ends are not made in India. Tubular steel matrix elements weighing about 75 tons have been provided at the exit of the two inner receivers so as to reduce the temperature drop due to expansion of the outgoing air to less than 20°C. An auxiliary receiver (length, 125 ft & diam., 12 ft) is

provided to operate experimental blowdown facilities.

The criteria for the dimensions, configuration and lay-out of the system were arrived at after considering the indigenous manufacturing capacity and availability of materials.

The design, fabrication and inspection procedures conform to approved codes for fusion-welded unfired pressure vessels. One of the largest facilities of its kind in Asia, the system (fabricated by the Tungabhadra Steel Products Ltd, Hospet) is being erected at the Wind Tunnel Centre, Belur.



NAL, Bangalore—Assembly of air receiver vessels at the Wind Tunnel Centre, Belur

Dr Gyan Mohan

Dr Gyan Mohan, Senior Scientific Officer : Grade I, National Physical Laboratory, New Delhi, has been appointed on promotion Assistant Director with effect from September 2, 1963.

Shri Gyan Mohan (*b.* Oct. 15, 1928) obtained the B.Sc. degree (1947) with honours in physics and mathematics and the M.Sc. degree (1949) in physics from the Banaras Hindu University. He started his career as junior assistant in the National Physical Laboratory and worked on experimental optics. In 1952, he qualified himself for the M.A. degree (mathematics) of the Punjab University.

Proceeding to U.S.A. in 1953 on a research assistantship, Shri Gyan Mohan studied theoretical physics at the State University of Iowa from where he obtained the Ph. D. degree (1956) for his thesis, *Renormalizable quantum field theory*. Thereafter he was appointed Assistant Professor at the University of Nebraska, Lincoln. On his return to India in 1958, Dr Gyan Mohan rejoined the Laboratory.

Dr Gyan Mohan has about ten publications to his credit and his special fields of study include relativistic quantum theory and elementary particle physics.

Dr R.L. Datta

Dr Rebati Lal Datta has been appointed Assistant Director, Central Salt and Marine Chemicals Research Institute, Bhavnagar, with effect from October 4, 1963.

After his early education at Chittagong, Shri Datta joined the Dacca University from where he obtained, after a brilliant academic record, the B.Sc. (Hons) and M.Sc. degrees in 1940 and 1941 respectively. He started his career in 1942 as research assistant in an Indian Council of Agricultural Research scheme at the Lucknow University, and during 1943-45 was employed as a research chemist at the D.C.M. Chemical Works, Delhi. Later, he proceeded to U.K. on a Government of India scholarship for higher studies at the Imperial College of Science and Technology, London, and obtained D.I.C. and Ph.D. (London) in chemical engineering under the guidance of Prof. D.M. Newitt, F.R.S. After returning to India, he served the Delhi Polytechnic as lecturer in chemical engineering (1949-53) and later was appointed lecturer at the Indian Institute of Science, Bangalore where he served till 1963. During 1956-57, he was on deputation to West Germany on an Alexander von Humboldt scholarship at the Max Plank Institute fur Chemie, Maine, and had training in the chemical engineering aspects of isotope separation under the guidance of Prof. Dr A. Klemm.

Dr Datta's research and development work at the Indian Institute of Science is mainly concerned with problems in the design of air lift pump, dynamics of bubbles and drops, heavy water and sweep distillation. He was consultant chemical engineer to many industries and was the investigator-in-charge of several CSIR research schemes. He is the author of some forty scientific publications.

Dr Datta is an Associate Member of the British Institution of Chemical Engineers, and Member of the American Institute of Chemical Engineers and the Indian Institute of Chemical Engineers.

PATENTS

Filed

90469 : *Processing of dry, ready-to-wet sausage casings from cattle, goat, sheep, pig and other mammalian intestines*—S.K. Barat, CLRI, Madras.

90470 : *Improvements in or relating to the manufacture of lime-surkhi mixtures from surkhi manufactured in down draught kiln*—N.R. Srinivasan, M.L. Bhatia, R.K. Ghosh & S.R. Mehra, CRRI, New Delhi.

Accepted

82192 : *An apparatus for the automatic collection of atmospheric pollen and spores*—P.K.K. Nair & K.N. Kaul, NBG, Lucknow.

Sealed

77223 : *Bed load sampler*—H.L. Uppal, Irrigation & Power Research Laboratory, Amritsar.

78015 : *Process for the extraction of tar acids*—D.K. Sen, C.S.B. Nair, A.N. Basu, & A. Lahiri, CFRI, Jealgora.

78778 : *A method of making chocolate coloured bricks from alluvial soils*—L.C. Jain, P.C. Jain & E.S.H. Lal, CBRI, Roorkee.

Accepted & Sealed

Switzerland

371.106 : *A process for the preparation of azelaic acid semi-ester suitable for making civetone dicarboxylic acid*—U.G. Nayak, K.K. Chakravarti & S.C. Bhattacharyya, NCL, Poona.

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R. N. 4212/5

CSIR NEWS

VOL. 14 JAN. 13, 1964 : PAUSA 21, 1885 NO. 1

LEATHER FAIR, MINERAL TANNAGES SYMPOSIUM & TECHNICAL EDUCATION SEMINAR

The Indian Leather Fair will be inaugurated by Shri Manubhai Shah, Union Minister for International Trade, and the Symposium on Mineral Tannages and Seminar on Technical Education (*CSIR News*, Vol. 13, No. 20, p. 2) by Dr A. Lakshmanaswamy Mudaliar, Vice-Chancellor of the Madras University and Chairman, Executive Council, Central Leather Research Institute, Madras on Jan. 27, 1964, at the Institute. Shri R. Venkataraman, Minister for Industries, Government of Madras, will preside.

The Indian Leather Fair, sponsored by the Leather and Allied Trades, the Central Leather Research Institute and the Indian Leather Technologists' Association, is being organised for the first time in India with a view to promote leather manufacture and export, to familiarise the industry with the requirements of leathers needed for defence purposes and to arouse leather consciousness among the public. The Fair will present a coordinated picture of the Indian leather and leather manufacture, the indigenous and overseas supplies of leather chemicals and treatment materials, as well as the manufacture of tanning, footwear and leather goods machineries.

Representatives from thirteen foreign countries, viz. U.S.A., U.K., West Germany, Japan, U.S.S.R., Yugoslavia, Czechoslovakia, Hungary, East Germany, Sudan, Kenya, Nigeria and Australia, are expected to visit the Fair. The Fair and the Central Leather Research Institute will be open to the public during Jan. 27-Feb. 2, 1964.

The Symposium on Mineral Tannages will provide a forum for the industrialists, tanners and the research workers to benefit by mutual discussion.

Twenty-seven papers covering the various theoretical and practical aspects of mineral tannages contributed by leading scientists from U.S.A., U.K., West Germany, Hungary and Japan, besides India, have been received for presentation at the symposium which will have three technical sessions (Jan. 28-29, 1964). The foreign participants include Prof. A. Kuntzel and Dr Miller from West Germany and Dr T. Thorestensen from U.S.A.

Along with the symposium, a Seminar on Technical Education will be held on Jan. 30, 1964 to focus the attention of all those associated with the leather industry to problems connected with the education and training of leather technologists. The programme for the seminar will include a Views-Forum, in which papers will be presented and discussed, and a group discussion to draft a blue print of education and training in leather technology to serve the future needs of the industry.

STAFF NEWS

Appointments

SHRI S.C. SINGH—Pool Officer, NML, Jamshedpur (Nov. 19, 1963).

DR A.G. DUTTA—Pool Officer, IIBEM, Calcutta (Dec. 13, 1963).

SHRI T.N. SHARANAPPA—Civil Engineer, CSIR Secretariat, New Delhi (Dec. 12, 1963).

Promotions

DR (MRS) F. THIVY, Junior Scientific Officer—Senior Scientific Officer : Grade I, CSMCRI, Bhavnagar (Oct. 26, 1963).

SHRI P.C. SEN, Junior Scientific Officer—Senior Scientific Officer : Grade II, NML, Jamshedpur (Dec. 6, 1963).

(Contd on p. 4, col. 1)

Shri K. Ray

Shri Kamlesh Ray, Assistant Director, National Register Unit, CSIR, New Delhi, has been appointed Deputy Director in charge of the Unit with effect from Nov. 22, 1963.

Shri K. Ray (*b.* July 12, 1914) graduated in 1935 with Honours in Physics and took his M.Sc. degree in Physics in 1937 from the Calcutta University. He started his research career under the guidance of the late Prof. M. N. Saha at the University College of Science, Calcutta. Shri Ray worked on several problems and projects, like high vacuum technique, design and development of mechanical and oil diffusion pumps, air-turbine type ultracentrifuge, optical instruments and tidal river model experiments. He served as Workshop Superintendent of the Physics Department of the University for two years.

Shri Ray was associated with Prof. M. N. Saha in initiating the Damodar River Plan in 1943-44 and in 1945 proceeded to U.S.A. for higher studies on the Ghose Travelling Fellowship of the Calcutta University. He took the Bachelor's degree (1947) in Civil Engineering from the California Institute of Technology, and Master's degree (1948) in Civil Engineering from the University of Colorado. He specialised in hydraulics, soil mechanics, river control and construction of dams. He visited the TVA and the works of the U.S. Bureau of Reclamation.

Along with his engineering studies in U.S.A., Shri Ray took extra courses in journalism, industrial management and city planning and also worked on research problems in applied optics under Prof. John

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B R I E F S

Science Reporter

The inaugural number (Jan. 1964) of this monthly, reported in *CSIR News*, Vol. 13, No, 22, p. 2, has been published. The highlights of the 48-page (28 cm. × 21.5 cm.) publication are popular articles on Inputs in Indian Science (S. Husain Zaheer), How 'Quiet' is the Sun ? (A.P. Mitra), New Technique for Mapping Cholera (S.K. Das Gupta), Long Span Space Structures (G.S. Ramaswamy) and The Versatile Polymers (S.R. Palit). Other features include 'Science and Humanities' by M.C. Chagla and 'Prof. Humayun Kabir' by D.N. Wadia, besides 'Satyen Bose is Seventy'.

Introducing the new branch of Science, Bionics, the section on Science News and Trends includes briefs on Tobacco chewing and cancer, Test tube fruits, Wood is good, Protein from petroleum, Mulch from petroleum, Transmitter of nervous impulses, and Making rain, besides reports on recent seminars, conferences, training courses, etc.

'Science aids industry', another regular section, covers research and development news on Upgrading coal, Carbon products, Coconut wastes, and Cryolite from aluminium, all of which have been investigated in the national laboratories. The Readers' Forum contains a provocative article, A Sceptic Looks at Science (in which the basic claim of science has been questioned) and welcomes reactions of readers.

NAL Publications

The following three annual reports of the National Aeronautical Laboratory, Bangalore have been printed: (i) Annual Report: 1960-61 (pp.38); (ii) Annual Report: 1961-62 (pp.39); and (iii) Annual Report: 1962-63 (pp.43).

A folder entitled *Harness the Wind with WP-2 Windmill* and a 12-page brochure, *Wind Tunnels Strictly for Beginners* have also been brought out by the Laboratory.

CMRS, Dhanbad

The second Open Day was celebrated by the Central Mining Research Station, Dhanbad on Nov. 24, 1963. A number of demonstrations were held in the Health, Mining, Ventilation and Engineering Divisions. The visitors included mining engineers, industrialists and officials and students connected with mining education and legislation.

Low Temperature Carbonization Meet

To mark the occasion of the completion of ten years' of continuous operation of the low temperature carbonization (l.t.c.) pilot plant, a meeting was held at the Regional Research Laboratory, Hyderabad, on Dec. 23, 1963. The meeting was presided over by Prof. Humayun Kabir, Union Minister for Petroleum & Chemicals and attended by Dr S. Husain Zaheer, Director-General, Scientific & Industrial Research, senior officials of the Central Government and several State Governments, technologists and prospective entrepreneurs from different parts of the country.

Complimenting the Laboratory on its pioneering work, Prof. Kabir urged that the country should take to the l.t.c. industry to provide the requirements of domestic fuel so that the dung and agricultural wastes at present being burnt could be better used as manure for raising agricultural production.

Dr Zaheer pointed out that the technical and economic feasibility of the l.t.c. process had been proved beyond doubt during the ten years of operation of the plant and called upon the entrepreneurs to come forward to set up large-scale plants and stressed the need to give high priority to this industry in the national development plans.

Welcoming the participants, Dr G.S. Sidhu, Deputy Director-in-charge, gave a brief account of the history of the pilot plant, its objectives, and the research work carried out at the Laboratory during the past ten years.

The meeting was followed by a technical session on Dec. 24, 1963 when papers on the latest developments in the processing of l.t.c. by-products were presented. A formal function was also held when awards were presented to some of the workers of the plant in recognition of their long and meritorious service in the plant. A brochure entitled *Ten Years of LTC* was brought out.

Mr. J.R. Cole

Mr J.R. Cole, International Civil Aviation Organisation expert on wind tunnel instrumentation working at the National Aeronautical Laboratory, Bangalore, left for U.K. on Dec. 7, 1963, on the expiry of his tenure of appointment (*CSIR News*, Vol. 13, No. 7, p.2).

Visits

Prof. Stanislav Landa, Professor of Fuel Technology, Technical University of Prague, Czechoslovakia, visited the National Aeronautical Laboratory, Bangalore on Oct. 25 & 28, 1963 and delivered a lecture on 'Industrial Fuels in Czechoslovakia'.

Prof. Landa also visited the Delhi and Dehra Dun centres of the Indian Institute of Petroleum. He had a detailed discussion with the staff on hydrogenation of petroleum fractions and gave a talk at the Dehra Dun centre on 'Some Problems in Hydrogenation' on Nov. 16, 1963.

Prof. A.A. Lebedinski, Professor of Aircraft Design, Aviation Institute, Moscow and Visiting Professor at the Indian Institute of Science, Bangalore, visited the National Aeronautical Laboratory, Bangalore on Nov. 5, 1963.

Mr Hassan-el-Salamouin of Egyptian Iron & Steel Co., Helwan, Egypt, U.A.R., visited the National Metallurgical Laboratory, Jamshedpur on Nov. 19, 1953.

Prof. S.A. Bagaturov, Unesco expert in Petroleum Refinery Engineering at the Indian Institute of Technology, Bombay, visited the Delhi and Dehra Dun centres of the Indian Institute of Petroleum and discussed with the staff of the Institute problems connected with petroleum refining and gave a talk on 'Petroleum Refining in U.S.S.R.' on Nov. 13, 1963.

Mr J. Favre, Director in charge of Foreign Relations Department, French Institute of Petroleum, Paris, visited the Dehra Dun centre of the Indian Institute of Petroleum on Dec. 4, 1963 and gave a talk on 'Recent Developments in French Petroleum Industry'.

RESEARCH PROGRESS

National Laboratories

NML, JAMSHEDPUR

Chromate Passivation of Zinc—The effect of acid content and temperature on the protective properties of chromate film formed on rolled zinc, galvanized steel and plated zinc has been studied. The following are the important conclusions of the study : (i) Acid content has profound influence in controlling the film formation ; when the quantity of sulphuric acid (sp. gr. 1.98) is increased from 5 ml./litre of sodium dichromate, the amount of film formed increases initially and decreases later on ; (ii) the protective property of the film decreases with increase in acid content ; (iii) increase in the temperature of the film beyond 60°C. destroys the protective properties considerably ; and (iv) rolled zinc and zinc plated steel show an overall higher resistance to corrosion than galvanized steel.

CGCRI, CALCUTTA

Glazed Bricks for Lining of Irrigation Channels—Proper lining of irrigation channels will reduce the seepage losses of irrigation water besides preventing the rise of water table. Hence, investigations were carried out to evaluate the use of common building bricks, cement plastered bricks and glazed bricks, as lining material for irrigation channels. Glazed bricks gave the best performance. Glazed building bricks as lining material are more economical than cement-coated bricks.

CRRI, NEW DELHI

Polymer Mortar and Concrete—Investigations have been carried out on the use of polyvinyl acetate (PVA) emulsion, as an admixture to cement-sand mortar and cement concrete for improving some of their characteristics. Most of the previous work done in this field in other countries is restricted to cement mortar using very high percentage (20% or more of wt of cement) of PVA. The present study is original in the sense that it has been extended to concrete also and the percentage of PVA, a very costly admixture, has been successfully reduced to as low as 2-3 per cent.

An admixture of 2-3 per cent of the polymer increases extensibility (strain-taking capacity) of the concrete or mortar and flexural strength as also the ratio of flexural strength to the modulus of elasticity. The higher extensibility is likely to improve the life of a pavement proportionately. PVA imparts increased durability to the mortar or concrete with respect to abrasion losses. The polymer reduces to a large extent the evaporative losses of water added to mortar or concrete on account of its hydrophilic character. Consequently, comparatively higher strength concrete or mortar is obtained even when no normal water curing is employed.

CDRI, LUCKNOW

Induction of Enzymes in Microorganisms—With a view to elucidating the factors controlling the biosynthesis of macromolecules, induction of histidase, tryptophanase and the oxidative degradation of mannose were studied in wild and purine-argine auxotrophs of *Vibrio cholerae*. Induction of enzymes was found to be stimulated by the growth factor, although cell multiplication was not a pre-requisite. Tryptophanase induction was repressed by glucose, whereas histidase induction was not subject to regulation by glucose.

NAL, BANGALORE

Drift Reduction in d.c. Amplifiers—A low-drift d.c. amplifier usually requires a stabilized heater voltage at least in the input stage. The use of fully stabilized d.c. supply to the heater may not often be justifiable from the point of view of cost, unless a fairly large number of d.c. amplifiers are used. The use of a thermistor-type voltage stabilizer, which is simple and costs little, gives an inexpensive d.c. amplifier circuit with low drift. Experiments were conducted on a single-stage 12AX7 differential amplifier using different supplies : (i) a.c. mains (1 per cent), (ii) d.c. from storage battery, and (iii) thermistor-stabilized a.c. (12.6V., 0.150 amp.). The thermistor stabilizer is a series combination of an NCL (National Chemical Laboratory, Poona) sample (rod type, resistance at 30°C.=1700 ohms) and a 6.3V., 0.115 amp. Mazda lamp. The results indicate considerable improvement in drift reduction in the case of thermistor-stabilized supply over that of stabilized a.c., the drift (r.m.s.) reduction factor as against the a.c. supply being in the range 3-6.

Reinforced Plastics for Construction of Aerodynamic Models—The use of reinforced plastics in the construction of test models in aerodynamic research offers certain unique advantages, and a Section devoted to the development of special techniques in this field has been set up at the Laboratory.

Models of complicated duct shapes for specific requirements having accurate internal contour and smooth surface finish have been produced using pure casting resins (epoxy and polyester) and resins containing various kinds of fillers such as calcium carbonate and glass powder and also reinforcing them with fibre glass. Best procedures for designing and moulding different types of models have been established after a study of the various methods of mould design and moulding techniques.

Research Papers

TIRUMALESA, D. (NAL, Bangalore)—Effect of shock boundary layer interaction on aerofoil pressure distributions at transonic speeds. *J. R. aero. Soc. Lond.*, **67** (1963), 674.

SUBRAMANIAN, N.R. & TIRUMALESA, D. (NAL, Bangalore)—A note on the prediction of the shock-wave position on airfoils at transonic speeds. *J. aero. Soc. India*, **15** (1963), 53.

SHENOY, S.B.R., NARAYANAN, U.H. & SUNDARARAJAN, K. (CECRI, Karaikudi)—A simple timer using dekatron and cold cathode trigger tubes. *Curr. Sci.*, **32** (1963), 304.

SHARMA, S. P. & GOYAL, B. K. (CBRI, Roorkee)—Analysis of continuous cylindrical shells. *Indian Concr. J.*, **37** (1963), 300.

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Transfers

SHRI R.C. BISWAS, Administrative Officer, RRL, Hyderabad—IIBEM, Calcutta (Oct. 19, 1963).

SHRI S. JAYARAMAN, Senior Scientific Officer : Grade II, CMRS, Dhanbad—Engineer Officer, CSIR Secretariat, New Delhi (Nov. 26, 1963).

SHRI S. DAS GUPTA, Administrative Officer, CECRI, Karaikudi—Under Secretary, CSIR Secretariat, New Delhi (Dec. 23, 1963).

Resignation

SHRI K. SIVA PRASAD, Senior Scientific Officer : Grade II, CBRI, Roorkee (Nov. 11, 1963).

* * *

DR B.R. NIJHAWAN, Director, NML, Jamshedpur, has been nominated on the Board of Directors of the National Mineral Development Corporation.

DR Y. NAYUDAMMA, Director & SHRI M.A. GHANI, Senior Scientific Officer, CLRI, Madras, have been nominated principal and alternate members respectively of the Technological Research Sub-Committee of the Indian Central Arecanut Committee, Ministry of Food & Agriculture.

DR P. S. GILL, Director, CSIO, Chandigarh, has been appointed Honorary Scientific Adviser to the Punjab Government in the task of formulating the State Government's policies.

DR N.K. PANIKKAR, Director, International Indian Ocean Expedition, New Delhi, has been renominated a member of the FAO Standing Advisory Committee on Marine Resources Research.

DR K.N. SINHA, Officer on Special Duty, CMRS, Dhanbad, has been nominated a member of the Boards of the Courses and Studies of the Faculty of Mining & Mineral Technology, Ranchi University.

DR K.D.S. SHARMA, Deputy Director, CGCRI, Calcutta, has been nominated a member of the reconstituted Development Council for Glass & Ceramics, Ministry of Industry.

PROF. G.S. RAMASWAMY, Deputy Director, CBRI, Roorkee has been nominated Chairman of the Structures Group II—Shell Structures of the Institution of Engineers (India) and member of the Commission on Light-weight Prestressed Concrete of the Federation Internationale de la Precontrainte (FIP).

SHRI V.S. SAMPATH, Senior Scientific Officer : Grade II, NML, Jamshedpur, returned to India and resumed duties on Nov. 26, 1963 after completion of his 6-month training (under the Colombo Plan) in Australia in the field of Extractive metallurgical techniques as applied to nonferrous metals.

SHRI V. K. SHARMA, who worked as a Research Fellow of a CSIR research scheme at the Botanical Survey of India (Northern Circle), Dehra Dun, has been awarded Ph. D. degree of the Agra University for his thesis : *Morphological and embryological studies of some families and genera of disputed systematic position.*

SHRI R. S. VARMA, RRL, Hyderabad, has been awarded the Ph. D. degree of the Lucknow University for his thesis : *Possible antituberculous compound.*

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Anderson who was in charge of the Astrophysics Department for the 200-inch Telescope Project. Telescope making is his hobby, and his first telescope was reported in *Scientific American* in 1941.

On his return, Shri Ray joined the Damodar Valley Corporation (DVC) as Executive Engineer in charge of materials testing, research and quality control in the construction of earth and concrete dams. He served the Corporation for eight years during which period he established a Central Laboratory and field laboratories in connection with the design and construction of dams. He also conducted foundation investigations for Durgapur and Rourkela Steel Plants.

Shri Ray joined CSIR in 1957 as Officer on Special Duty for the Scientific Personnel Committee and the National Register Unit. He was appointed Assistant Director of the Unit the next year.

Shri Ray has published a number of research papers in engineering and physics covering concrete technology, hydraulics, optics, acoustics and scientific instruments. He has also contributed several papers and articles on planning, employment, scientific and technical manpower, education and research in several technical and economics journals.

Shri Ray's other activities include writing of popular science articles in English and Bengali and he has won several prizes in this field. Shri Ray is the editor of the *Technical Manpower* bulletin of CSIR, and of *Vijnan Karmee*, the journal of the Association of Scientific Workers of India, and is a collaborating editor of *Science & Culture*.

Shri Ray is an Associate Member of the Institution of Engineers (India), and a Member of the Indian National Society of Soil Mechanics and Foundation Engineering. He is also a member of the National Council for Training in Vocational Trades, the Central Institute for Labour Research of the Ministry of Labour, Working/Planning Group on Manpower and Employment for the formulation of proposals for the Fourth Five-Year Plan, Ministry of Home Affairs, and Materials and Supply Sub-Committee of the Working Group on Technical Education, Ministry of Education.

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CSIR NEWS

VOL. 14 JAN. 27, 1964 : MAGH 7, 1885 NO. 2

PRIME MINISTER NEHRU OPENS INDO-SWISS TRAINING CENTRE

Shri Jawaharlal Nehru, Prime Minister and President of CSIR, inaugurated the Indo-Swiss Training Centre (a joint venture of the Swiss Foundation and the Council of Scientific and Industrial Research) at Chandigarh on Dec. 18, 1963 before a distinguished gathering which included Shri M.C. Chagla, Union Minister of Education and Vice-President, CSIR, Sardar Partap Singh Kairon, Chief Minister of Punjab, other ministers and senior officers of the Punjab Government, Dr S. Husain Zaheer, Director-General, Scientific & Industrial Research and Shri A.J. Kidwai, Secretary, CSIR. The Swiss Foundation was represented by its President, Dr Hans Schindler. The Swiss Ambassador in India, Dr Jacques Albert Cuttat and Prof. M.S. Thacker, Member of Planning Commission, were among the other distinguished invitees.

In his welcome address, Dr Zaheer traced the history of the Centre and appreciated the important part played by the President of the Swiss Foundation, Dr Schindler. He paid tributes to Dr Fritz Real, former Director of the Swiss Foundation and Prof. M.S. Thacker, former Director-General, Scientific & Industrial Research, as the architects of the agreement which was signed in 1961. He also commended the valuable work of Dr K.N. Mathur as the first Director of the Central Scientific Instruments Organization (CSIO) and later as Officer on Special Duty in the early implementation of the project and expressed the hope that the Centre would go a long way in meeting the demand of precision technicians in the scientific instruments industry.

Detailing the set-up and objectives of the Swiss Foundation, Dr Schindler said that the Indo-Swiss Training Centre was the principal beneficiary of the Foundation. Dr J.A. Cuttat said that the Centre was a symbol of cooperation between his country and India and expressed the hope that the Centre would contribute to greater understanding between the two countries.

Shri Kairon expressed great satisfaction in having the institution in Punjab and assured his help in the expansion of the activities of both the Centre and CSIO.

Shri Chagla who presided over the function emphasised that India was determined to take part in the scientific revolution sweeping the world, though we were not participants in the Industrial Revolution earlier. He hoped that the Centre would be the forerunner of many such institutions in the country.

The Prime Minister who formally opened the Centre said that the Centre was a shining example of the collaboration between India and other countries, and expressed the hope that it would be of immense benefit to not only Punjab but the country as a whole.

Dr K.N. Mathur proposed the vote of thanks.

The Centre will train in a 3-year course precision mechanics (age group, 17-19 years) for the scientific instruments industry. The first batch of trainees joined on Oct. 1, 1963.

CPHERI, NAGPUR

The office and laboratories of the Central Public Health Engineering Research Institute, Nagpur have shifted from Civil Lines to their new building at *Wardha Road*, Nagpur.

Geophysics relating to Earth's Crust

The Symposium on Problems in Geophysics relating to the Crust of the Earth (*CSIR News*, Vol. 13, No. 19, p. 1) will be held on Jan. 30 & 31, 1964 at the Geology Department, Osmania University, Hyderabad. There will be three technical sessions devoted to : (i) Geophysical exploration, (ii) Physical properties of rocks and (iii) Physical oceanography.

SITRA Technological Conference

Dr S. Husain Zaheer, Director-General, Scientific & Industrial Research, will inaugurate the Fourth Annual Technological Conference of the South India Textile Research Association (SITRA), Coimbatore, on Feb. 19, 1964 at 10.00 a.m. The object of the two-day conference is to appraise member mills of the results of research conducted during the year at the Association.

A symposium on Man-made Fibres will also be arranged as part of the conference.

The Metric Slide Rule, designed by the Association, will be released by the Director-General.

STAFF NEWS

Appointments

SHRI V. JANARDANA CHETTY—Senior Scientific Officer : Grade II, CMERI, Durgapur (Oct. 3, 1963).

SHRI T.S. CHANNA BASAVAN—Junior Scientific Officer, CMERI, Durgapur (Oct. 5, 1963).

DR DEBDAS BHADURI—Pool Officer, CMERI, Durgapur (Nov. 2, 1963).

DR (SMT) S.V. CHANDRA—Senior Scientific Officer: Grade II, CDRI, Lucknow (Nov. 12, 1963).

DR B.K. RAY—Senior Scientific Officer: Grade I, CMERI, Durgapur (Nov. 14, 1963).

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B R I E F S

Vigyan Pragati Editorial Committee

An Editorial Advisory Committee to assist and guide the Council in regard to the editorial and sales promotion matters of *Vigyan Pragati* has been constituted with Dr B.N. Prasad, Director, Central Hindi Directorate & Member-Secretary, Standing Commission for Scientific & Technical Terminology, Ministry of Education, New Delhi as Chairman. The following are the members of the Committee : Shri A.J. Kidwai, Secretary, CSIR, New Delhi ; Shri Raghu Nath Singh, 15 Canning Lane, New Delhi; Shri Nawab Singh, 25 North Avenue, New Delhi ; Dr R.C. Mehrotra, Dean of the Faculty of Sciences, Rajasthan University, Jaipur ; Shri Bankey Behari Bhatnagar, Editor, *Hindustan Saptahik*, New Delhi ; Shri A.K. Jain, Editor, *Nav Bharat Times*, New Delhi ; Shri O. P. Sharma, Editor (*Kheti*), Indian Council of Agricultural Research, New Delhi ; Dr S.C. Jain, Assistant Director, National Physical Laboratory, New Delhi ; Shri R.C. Tewari, Assistant Editor ; CSIR, New Delhi ; Shri S. P. Ambasta, Senior Scientific Officer : Grade I, CSIR, New Delhi; & Shri K.M. Agarwala, Under Secretary, CSIR, New Delhi (*Secretary*).

10 years of LTC

A 16-page illustrated brochure entitled *10 years of LTC* has been published by the Regional Research Laboratory, Hyderabad. Giving a a brief description of the pattern of energy consumption in India, the brochure deals with the history of the low temperature carbonization pilot plant installed at the Laboratory, its objectives, the process employed for the production of the smokeless fuel, Kolsit, utilization of by-products, and research and development work on the by-products. The scope of commercial plants and capital requirements & cost estimates for plants of different capacities are also included.

Water-proofing of Small Irrigation Channels

An illustrated pamphlet bearing the above title has been published. The 10-page publication (Royal 8 vo) describes the process worked by the Central Road Research Institute, New Delhi for minimizing seepage of water through conventional irrigation channels. Information in regard to the chemicals used, their approximate price & availability and cost of construction is appended. The pamphlet is intended to popularise the process among farmers.

Carbon & Carbon Products Seminar

The Seminar on Carbon and Carbon Products (*CSIR News*, Vol. 13, No. 15, p.l) was held at the National Physical Laboratory, New Delhi during Nov. 26-29, 1963. About 20 papers dealing with the production, characteristics and testing of raw materials such as petroleum coke, pitch coke, dense and porous carbon, graphite products and rare earth salts required for arc carbons, etc. were read. A few papers dealt with the testing of carbon brushes and arc carbons required for theatres. The seminar was attended by about 40 delegates from different parts of the country.

An exhibition of carbon products was also held along with the seminar.

Mr J. Martin

Mr J. Martin, President of *J.W. Martin & Co.*, New York, and a co-opted member of the U.N. Special Fund Office for Petrochemical Study, visited the Indian Institute of Petroleum, Dehra Dun on Sept. 30 & Oct. 1, 1963.

Shri B.S. Kesavan

Shri B. S. Kesavan, Director, Indian National Scientific Documentation Centre, New Delhi, who had been the Librarian of the National Library of India for the last fifteen years, has been invited to direct the Seminar on the Development of National Libraries in Asia and the Pacific Area to be held at Manila, Philippines during Feb. 3-15, 1964.

The purpose of the seminar is to bring together directors and other high-ranking members of the staff of national libraries and potential heads of such libraries so that they may exchange their views and experiences, draw up a general plan and formulate recommendations leading to concrete action for the development of national libraries in Asia and the Pacific Area.

The following countries, besides Philippines and India, will participate in the seminar : Afghanistan, Australia, Brunei, Burma, Cambodia, Ceylon, China, Hong Kong, Indonesia, Iran, Israel, Japan, Korea, Laos, Malaysia, Mongolia, Nepal, New Zealand, Pakistan, Thailand and Viet-Nam.

Representatives and observers from the United Nations and other international organisations besides some of the important American Foundations, international library associations and foreign cultural missions maintaining library services will also attend the seminar.

CPHERI, Nagpur — New Buildings of the Institute

RESEARCH PROGRESS

National Laboratories

NML, JAMSHEDPUR

Suitability of Jainti Dolomite for use in Steel-making Refractories—Firing and sintering characteristics of Jainti dolomite were investigated with a view to assess the suitability of the semi-stabilized and completely stabilized product for use in steel-making refractories.

Samples of 4 in. size Jainti dolomite were calcined at 1700°C. for 3 hr. The characteristics of the calcined product were : bulk density, 1.88-3.2 g./cu. cm. and porosity, 10-47 per cent. The dolomite powder was stabilized by mixing it with 25 parts of serpentine and 0.5-1.0 per cent boric acid and firing at 1600 and 1650°C separately. The fired bricks were crushed and tamped using sulphite lye as binder. The bulk density and refractoriness (under load) of the tamped bricks were determined. Tests on the stabilized bricks showed that the dolomite, which was as good as Hardi dolomite, was suitable for making refractories used in steel-making and superior to Hirri dolomite.

Sponsored Research

Coke Blending and Coking Research—Pilot oven tests were carried out with (i) Poniati seam coal (Raniganj coal field), (ii) washed Badjna seam coal (Raniganj coal field) and (iii) washed Hatnol seam coal, by mixing them with washed Kargali coals and crushing the blends selectively with a view to producing hard coke with improved coking properties The results have shown that (i) the quality of coke obtained from blends containing 20-30 per cent Poniati seam coal improved when the blends were selectively crushed, the Breslau Index (B.I.) of coke was 81.5 and ash content 21.61 per cent; (ii) hard coke (B.I., 80.2 and ash 20.47%) could be obtained from blends containing a maximum of 25 per cent of washed Badjna seam coal; and (iii) hard coke (B.I., 81.4 and ash 22.46%) could be obtained from the blends containing a maximum of 40 per cent washed Hatnol seam coal.

Full-scale tests were also carried out with Shampur seam coal in admixture with Dugda washed coal to produce hard coke. The tests showed that (i) hard coke (B.I., 82.3 and ash 22.12%) could be produced with 35 per cent washed Shampur seam coal and 15 per cent Poniati seam coal in admixture with 50 per cent Dugda washed coal, and (ii) hard coke (B.I., 83.0 and ash 21.66%) could be obtained from the blend containing 30 per cent washed Shampur seam coal and 30 per cent Dishergarh seam coal in admixture with 40 per cent Dugda washed coal.

Standard Test for Tensile Strength of Concrete—The aim of the investigation was to standardize the testing procedure for determining the tensile strength of concrete and to correlate this property with compressive strength and modulus of rupture.

A total of thirty-eight batches of concrete specimens were cast and a series of tests were conducted. The factors influencing the test results, such as the size of the specimen, packing material and rate of loading, were analysed. The main conclusions of the analysis are as follow :

(i) The cylinder split test gives the least scatter of test results and strength values; hence this test should be adopted as the standard test for determining the tensile strength of concrete. (A standard testing procedure for this test has also been worked out).

(ii) The size of the cylinder has considerable influence on the observed strength; the diameter of the specimen affects the results more significantly than the length. Reduction in the size of the specimen increases the observed strength; cylinders of the size 6 in. × 12 in. give the most consistent results. (Hence, this size has been suggested as the standard size of the specimen).

(iii) Tests conducted using $\frac{1}{2}$ in. × $\frac{1}{8}$ in. plywood packing strips give more uniform results than tests conducted without packing strips.

(iv) With the increase of the rate of loading the observed mean tensile strength also increases. Loading at the rate of 200 lb./sq. in./min. is satisfactory.

(v) A relationship of the form $f_t = K C^n$ (where f_t is tensile strength, C is compressive strength and K and n are constants) exists between tensile strength and compressive strength of concrete ; but the values of K and n are easily influenced by several factors.

(vi) The ratio of the modulus of rupture to tensile strength also varies; however the tensile strength is 0.5-0.65 times the modulus of rupture—V. RAMAKRISHNAN & K.C. GOPAL, P.S.G. College of Technology, Coimbatore.

Research Papers

RAMASWAMY, G.S., RAMAIAH, M. & BALLAL, B.Y. (CBRI, Roorkee)—Matrix methods in structural analysis: Part I-Elements of matrix algebra. *Indian Concr. J.*, **37** (1963), 418; Part II-Methods of inventing matrices. *Indian Concr. J.*, **37** (1963), 463.

SHARMA, S.P. & GOYAL, B.K. (CBRI, Roorkee)—The analysis of continuous folded plates. *Indian Concr. J.*, **37** (1963), 448.

THYAGARAJAN, T.R., SRIVASTAVA, O.P. & VORA, V.C. (CDRI, Lucknow)—Some cytological observations on the effect of griseofulvin on dermatophytes. *Naturwissenschaften*, **50** (1963), 524.

GOKHALE, S.D., KELKAR, V.V. & GULATI, O.D. (Medical College, Baroda)—Some observations on the possible mediation of carbon tetrachloride hepatotoxicity through the central nervous system. *Arch. int. Pharmacodyn.*, **144** (1963), 423.

DUTTA, J. & BISWAS, R.N. (Jadavpur University, Calcutta)—Synthesis of perhydro-5,8-dimethylindane-1, 4-dione and indane-1-one. *J. chem. Soc.*, (1963), 2387.

NADKARNI, S.R. & SOHONIE, KAMALA (Institute of Science, Bombay)—Isolation and purification of β-amylase from double bean. *Enzymologia*, **25** (1963), 337.

PRAHLAD, K.V. & KAR, A.B. (CDRI, Lucknow)—New evidence against the putative anti-implantation effect of metaxylohydroquinone. *Fert. & Ster.*, **14** (1963), 372.

(*Contd from p. 1, col. 3*)

DR R. NARAYAN—Senior Research Fellow—Senior Scientific Officer: Grade II, CECRI, Karaikudi (Nov. 29, 1963).

SHRI H. A. SIDDIQUI—Senior Scientific Officer: Grade I, CMERI, Durgapur (Nov. 30, 1963).

DR S.K. PAVANARAM—Pool Officer, NCL, Poona (Dec. 2, 1963).

DR K.R. BISWAS, Pool Officer—Senior Scientific Officer: Grade I, CFRI, Jealgora (Dec. 9, 1963).

DRS M.P. REDDY & S N. KULKARNI—Senior Scientific Officers: Grade II, NCL, Poona (Dec. 9 & 18, 1963 respectively).

DR P B. ROY CHOWDHARY—Senior Scientific Officer: Grade I, NCL, Poona (Dec. 18, 1963).

SHRI R.D. MEHTA—Civil Engineer, CSIR Secretariat, New Delhi (Dec. 26, 1963).

SHRI B.R. RAMA MURTHY—Civil Engineer, CSIR Secretariat, New Delhi (Dec. 30, 1963).

SHRI B. GUHA—Section Officer, CMERI, Durgapur (Dec. 30, 1963).

DR NARENDRA NATH GHATAK—Technical Information Officer, CSIR Secretariat, New Delhi (Jan. 1, 1964).

SHRI S. R. NAGARAJ—Civil Engineer, CSIR Secretariat, New Delhi (Jan. 2, 1964).

Promotions

SHRI M. M. KRISHNAIAH, Senior Scientific Assistant—Junior Scientific Officer, NCL, Poona (July 22, 1963).

SARVASHRI M. SUNDARAM, U. H. NARAYANAN, P. S. DESIKAN, G. S. SUBRAMANIAN, S. R. RAJAGOPALAN & K. BALAKRISHNAN, Junior Scientific Officers—Senior Scientific Officers: Grade II, CECRI, Karaikudi (Nov. 13, 1963).

SHRI S.K. RANGARAJAN, Junior Scientific Officer—Senior Scientific Officer: Grade II, CECRI, Karaikudi (Nov. 23, 1963).

SHRI B.S. VENKATESH, Assistant Engineer, NAL, Bangalore—Civil Engineer, CSIR Secretariat, New Delhi (Dec. 27, 1963).

SHRI S.L. NAYAR, Senior Scientific Officer: Grade II—Senior Scientific Officer: Grade I, CDRI, Lucknow.

Transfer

SHRI R. SOUNDARARAJAN, Section Officer, CGCRI, Calcutta—CDRI, Lucknow (Dec. 26, 1963).

PATENTS & PROCESSES

Patents Filed

89685 : *A process for the preparation of pancreatin from buffalo pancreas*—A.C. Majumdar, Ramanuj Sen & P.D. Mathur, CDRI, Lucknow.

90574 : *A process for the preparation of dl-muscone*—M.S.P.R. Nayar, H.H. Mathur & S.C. Bhattacharyya, NCL, Poona.

90674 : *Activated carbon for phosgene manufacture* — R. T. Thampy & S.R. Goel, Shri Ram Institute for Industrial Research, Delhi.

90677 : *A new method for the preparation of formic acid*—H.G. Vartak, S.G. Patil & S.V. Paranjpe, NCL, Poona.

90907 : *A process for the recovery of elemental sulphur and/or production of sulphur dioxide from pyrites*—A. Lahiri, N.G. Basak, G. Rao, N. Biswas, S. Banerjee & S.P. Chowdhury, CFRI, Jealgora.

91134 : *Improvement in or relating to a precision temperature controller for use with electrical resistance furnaces up to 1600°C.*—K.P.S. Kumar & A.P. Chowdhury, NML, Jamshedpur.

91290 ; *Improvements in or relating to an apparatus for the measurement of gel-time of thermosetting resins*—A. Pande, M. Krishnan & S.K. Bhatnagar, Shri Ram Institute for Industrial Research, Delhi.

Ceylon

5333 : *A process for the direct solvent extraction of fresh coconut kernels for recovery of oil and edible meal*—B. H. Krishna, V.B. Shanbag, K.G. Ramaswamy & M.V. Rao, CFTRI, Mysore.

Patent Accepted

U.S.A.

784138 : *Dirigible lamp assembly for vehicles*—C.R. Gupta, NPL, New Delhi.

PROCESS

Pollen Collection Apparatus—An apparatus for the automatic collection of atmospheric pollen and spores (Indian Pat. Nos. 72611 and 82192) has been designed and fabricated at the National Botanic Gardens, Lucknow. Tests carried out on the apparatus for over 6 months have shown that its performance is satisfactory.

The estimated cost of the apparatus is Rs 395-445, the cost of materials being Rs 245-295 and that of fabrication Rs 150. The description and working of the apparatus have been given in *CSIR News*, Vol. 13, No. 22, p. 3.

Parties desirous of undertaking the commercial development of the process may correspond with: Executive Director, National Research Development Corporation of India, Mandi House, Lytton Road, New Delhi-1.

Resignation

DR R. SRINIVASAN, Junior Scientific Officer, NCL, Poona (Dec. 20, 1963).

* * *

PROF. K. N. KAUL, Director, NBG, Lucknow, has been nominated a member of the State Council of Scientific & Industrial Research, Uttar Pradesh.

DR T. BANERJEE, Deputy Director, NML, Jamshedpur, has been nominated a member of the Sub-Group for Copper and Manganese under the Planning Group, Non-ferrous Metals, of the Planning Commission.

SHRI P.I.A. NARAYANAN, Officer in charge (Ore Dressing), NML, Jamshedpur, has been nominated a member of the Planning Group on Minerals (other than coal) set up by the Union Ministry of Mines and Fuel for the formulation of proposals for the Fourth Plan.

SHI P. P. BHATNAGAR, Assistant Director, NML, Jamshedpur, has been nominated a member of (i) Sub-Group for Aluminium, Magnesium aud Silicon under Planning Group, Non-ferrous Metals, of the Planning Commission; & (ii) Ferroalloy Sub-Committee of the Indian Standards Institution.

DR A.B. KAR, Assistant Director, CDRI, Lucknow, has been nominated a member of the Family Planning Working Group, Union Ministry of Health.

DR B.C. KUNDU, Assistant Director, CDRI, Lucknow, has been nominated a member of the Medicinal Plants and Minor Crops Committee of the Indina Council of Agricultural Research.

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CSIR NEWS

VOL. 14 FEB. 10, 1964 : MAGH 21, 1885 No. 3

SYMPOSIUM AND SEMINAR

Solid State Physics—Symposium and Lectures on Solid State Physics, organised jointly by the National Physical Laboratory, New Delhi and the University Grants Commission will be held at the Laboratory early in April 1964. The Symposium is intended to provide an opportunity to research workers in various universities, national laboratories and other research institutions to discuss the recent work and the current problems in this field of physics.

Original papers on the recent experimental or theoretical work as well as review articles having intimate bearing on the subject are invited.

Titles of the papers or the review articles to be presented should reach Dr S.C. Jain, Assistant Director, National Physical Laboratory, Hillside Road, New Delhi-12 by March 1, 1964 and the synopsis by March 15, 1964.

The papers and lectures will be published. Enquiries regarding the Symposium and Lectures may be addressed to Dr Jain of the Laboratory.

Processing of Man-made Fibres—The Silk & Art Silk Mills' Research Association, Bombay is organising a seminar during March 5-7, 1964 on *Principles of Processing of man-made fibres* with a view to acquainting the personnel engaged in the trade and industry with the fundamental principles of processing of man-made fibres. The objective of the seminar is to impart basic knowledge to the administrative, sales and other types of personnel engaged by the trade and industry so as to enable them to function more effectively in their own activities.

The seminar is being organised at SASMIRA Lecture Hall No. 2, Second Floor, Technical Institute Wing. The number of participants is limited to thirty persons.

Meeting

A meeting of the Executive Council of National Chemical Laboratory, Poona will be held on Feb. 22, 1964 at 9.30 A.M. at the Laboratory. Dr T.R. Govindachari will preside.

Dr S.H. Zaheer

Dr S. Husain Zaheer, Director-General, Scientific & Industrial Research has been appointed President of the Institution of Chemists (India) for 1964-65.

Dr B.N. Mitra

Dr B.N. Mitra, Director, Regional Research Laboratory, Jorhat has been appointed as Director, CIMPO, Lucknow, on transfer. He took charge on Feb. 5, 1964.

Dr K.N. Mathur

Dr K.N. Mathur, Officer on Special Duty, Indo-Swiss Training Centre, CSIO, Chandigarh has been appointed Emeritus Scientist and will be attached to the NPL, New Delhi.

STAFF NEWS

Appointments

SHRI K. CHALAMAIAH—Civil Engineer, CSIR, New Delhi (Jan. 20, 1964).

SHRI A.K. BOSE, Senior Scientific Officer : Grade I—designated as Defence Coordination Officer, CSIR.

DR S.K. GHOSH—Pool Officer, CMRS, Dhanbad (Jan. 1, 1964).

SHRI P.V. PAWAR—Pool Officer, CBRI, Roorkee (Dec. 23, 1963).

Resignations

SHRI BIJALI CHAKRAVARTI, Senior Scientific Officer : Grade II, CMRS, Dhanbad (Feb. 1, 1964).

SHRI N. MOHAN RAO, Senior Scientific Officer : Grade II, CRRI, New Delhi (Dec. 9, 1963).

* * *

DR G. N. SRIVASTAVA, Junior Scientific Officer, CDRI, Lucknow resumed duties on Dec. 17, 1963 after completion of his training in Haematology in France.

* * *

Nominations

DR H.A.B PARPIA, Director, CFTRI, Mysore, has been nominated a member of the Development Council for Sugar, Ministry of Industry.

DR P.S. GILL, Director, CSIO, Chandigarh, has been nominated a member of the Laboratory Glassware and related Apparatus Sectional Committee of ISI.

SHRI R.S. MEHTA, Director, CPHERI, Nagpur, has been nominated Chairman of the Sanitary Appliances and Water Fittings Sectional Committee of ISI.

SHRI DINESH MOHAN, Deputy Director-in-charge, CBRI, Roorkee, has been nominated (i) Chairman of the Foundation Engineering Sectional Committee of the Indian Standards Institution ; and (ii) Member of the Advisory Committee for the Department of Civil Engineering of the Indian Institute of Technology, Kharagpur.

DR N.G. BASAK, Deputy Director, CFRI, Jealgora, has been nominated a member of the Executive Council of the Indian Institute of Petroleum, Dehra Dun. SHRI A.N. BASU, Assistant Director of the Institute will act as alternate member.

DR G.S. SIDHU, Deputy Director-in-charge, RRL, Hyderabad, has been nominated a member of the Chemical Divisional Council of Indian Standards Institution (ISI).

DR D.S. DATAR, Deputy Director-in-charge, CSMCRI, Bhavnagar

(*Contd on p. 4, col. 1*)

BRIEFS

Hindi Unit Advisory Committee

An Advisory Committee of the Hindi Unit for popularising science through Hindi medium has been constituted with Dr R.C. Mehrotra, Dean of the Faculty of Science, Rajasthan University, Jaipur as Chairman. The following are the members of the Committee : Dr Gurbaksh Singh, Professor of Chemistry, Banaras Hindu University, Varanasi; Dr Gopal Tripathi, Professor of Chemical Engineering, Banaras Hindu University, Varanasi; Prof. L.S. Kothari, Professor of Physics, Delhi University, Delhi; Dr R.B. Arora, All India Institute of Medical Sciences, Delhi; Dr B.N. Prasad, Director, Central Hindi Directorate & Member-Secretary, Standing Commission for Scientific & Technical Terminology, Ministry of Education, New Delhi; Shri Jagjit Singh, Director (Traffic), Railway Board, New Delhi; Dr G.S. Sidhu, Deputy Director incharge, Regional Research Laboratory, Hyderabad; Shri A. Rahman, Officer on Special Duty (Publications), CSIR, New Delhi; Shri A.J. Kidwai, Secretary, CSIR, New Delhi; Shri K.M. Agarwala, Under Secretary, CSIR, New Delhi (*Member-Secretary*).

Visits

Prof. Lawrence Bragg, Director, Royal Institution, London, visited the Birla Industrial & Technological Museum on Jan. 8, 1964 and delivered a lecture on "Nature of Things".

Shri M.C. Chagla, Union Minister of Education and Vice-President, CSIR, visited Birla Industrial & Technological Museum, Calcutta on Jan. 13, 1964.

A team of Unesco trainees in mineral dressing, accompanied by their professors, visited the Central Mining Research Station, Dhanbad on Jan. 20, 1964. The team included people from Nepal, Thailand, Japan, Korea, Burma, Philippines, Russia and Indonesia apart from India. They discussed with Dr K.N. Sinha, Officer on Special Duty the various aspects of working of the Mining Research Station and about the Indian industry and visited the laboratories of the Research Station and showed great interest in the Dust and Particle Size Laboratory.

Prof. G. A. Rohlich, W.H.O. Expert visited CPHERI, Nagpur during the first week of February and gave a series of lectures on water, sewage and industrial wastes treatment.

New Research Schemes

The following research schemes under the Physical Research Committee have been sanctioned :

1. *Theoretical and experimental investigations on the absorption spectra of molecules in crystalline or solid state*—Dr (Mrs) C. Santhamma, Andhra University, Waltair.

2 *Spectroscopic and X-ray investigations on ancient Indian materials-Bronzes*—Dr S. Paramasivan, 6-Rajachar street, Thyagaroyanagar, Madras.

3. *Study of the interactions caused by high energy negative K. mesons in emulsion nuclei using pulse magnet technique*—Dr A.A. Kamal, Osmania University, Hyderabad.

4. *Studies in molecular polarizability of some organic molecules*—Dr B. Purnachandra Rao, Sri Venkateshwara University, Tirupati.

5. *Study of anisotropy of photoconductivity of single crystals*—Dr S.C. Ganguly, Jadavpur University, Calcutta.

6. *Studies in electro-luminescence*—Dr Hari Mohan, Allahabad University, Allahabad.

7. *Study of high anisotropy magnetic materials and their application to sub-millimeter*—Dr K.G. Srivastava, Allahabad University, Allahabad.

8. *Spectra and structure of diatomic molecules : Intensity distribution in molecular spectra*—Shri N. Sreedhara Murthy, Central College, Bangalore.

9. *Study of different collisional cross-section and excited spectra, etc.*—Dr B.N. Srivastava, Gorakhpur University, Gorakhpur.

10. *Optical and microwave absorption in colour centres in crystals*—Dr (Miss) V. Sarojini, J.V.D. College of Science & Technology, Andhra University, Waltair.

11. *Study of defect structure by ion and phonon migration and the study of trapped levels in the forbidden region by resonance luminescence*—Dr K.C. Bansigir, Osmania University, Hyderabad.

12. *Study of solid state by chlorine nuclear quadrupole resonance*—Shri C.R. Krishna Murthi, Andhra University, Waltair.

13. *Structure analysis af organic molecules and coordination complexes by X-ray, etc.*—Shri P. Srivastava, Gorakhpur University, Gorakhpur.

Terminated Schemes

The following schemes have been terminated with effect from the dates noted against them :

1. *Improvement in the production and utilization of lemongrass*—Dr N.S. Wariyar, Chemistry Department, University College, Trivandrum (Nov. 30, 1963).

2. *Quantitative cytochemistry of human and other parasite protozoa, etc.*—Dr N.N. Ray, School of Tropical Medicine, Calcutta (Dec. 31, 1963).

3. *The botanical exploration of Tungar Hills, Thana dist., Bombay State*—Prof. P.V. Bole, St. Xavier's College, Bombay (Dec. 31, 1963).

4. Standardisation of salt fog test—Shri B. Sanyal, Defence Research Laboratory (Materials), Post Box No. 320, Kanpur (Feb. 29, 1964).

5. Investigation of the influence of adrenocorticotrophin (ACTH) etc.—Dr S. Lahiri, Department of Physiology, Presidency College, Calcutta (Feb. 29, 1964).

6. Studies on some botanical aspects of the oceanography—Dr T. Sreeramulu, Botany Department, Andhra University, Waltair (Feb. 29, 1964).

7. Studies on the phosphatases of mammalian brain—Dr D. Subrahmanyam, V.P. Chest Institute, University of Delhi, Delhi (Feb. 29, 1964).

8. Development of electronic teleprinter—Dr N. N. Biswas, Department of Electrical Engineering, University of Roorkee, Roorkee (Feb. 29, 1964).

RESEARCH IN PROGRESS

National Laboratories

CSMCRI, BHAVNAGAR

Proteins from Marine Algae—Ulva, a sea-weed, is known to contain large percentage of protein (30-50 per cent on moisture and ash-free basis). This weed occurs very widely throughout the Indian coastal line and it is estimated that nearly 5 tons per annum of this sea-weed are available on the Saurashtra coast alone.

A method for the extraction of proteins from Ulva has been developed. The sea-weeds are treated with a mixture of ether and water, extracted with sodium hydroxide solution (1N) and the proteins precipitated by trichloroacetic acid. The protein content of the isolate is 60 per cent and the overall yield on protein basis is 20 per cent—R.G. Parikh & A.V. Rao.

INSDOC, NEW DELHI

Science Bibliography—The Indian National Scientific Documentation Centre (Insdoc) has brought out a pilot fascicule of the Indian Current Science Bibliography. The pilot issue (Jan. 1964) indexes 845 articles including 95 published by Indian scientists in foreign periodicals, 10 theses, 15 reports and other *ad hoc* publications, 235 patents and 30 standard specifications. It is intended to bring out this publication ultimately as an abstracting service.

Original articles, critical reviews, and survey articles have been noticed in this bibliography. The entries are arranged in broad subject groups in accordance with the Universal Decimal Classification. There is an Author Index and a Subject Index given at the end. A list of Indian Scientific periodicals which are to be scanned regularly is also appended.

Scientists all over the country have been feeling the urgent need for a periodical bibliographic publication which will mirror the scientific output of the country. The Conference of Information Scientists, organised by the Council of Scientific & Industrial Research in Mysore in 1963 drew specific attention of all people concerned to this need and directed the Insdoc to take immediate action to ensure bibliographical control of scientific publications in India.

It is estimated that in the field of pure and applied sciences 450 periodicals, 2,000 patents, 300 standard specifications, 500 reports, monographs and other *ad hoc* publications are published in India every year. Besides, a number of papers are presented in Conferences and Symposia every year and many articles are published by Indian scientists in foreign periodicals. All this will add up to about 15,000 scientific papers every year.

Copies of the pilot fascicule are being sent to scientists, documentalists and librarians for their comments. Interested persons can obtain copies of the fascicule from Insdoc on request.

Sponsored Research

Ultimate Strength of Reinforced Concrete Beams in Combined Bending and Torsion—The object of the investigation was to experimentally study effects on reinforced concrete (R.C.) rectangular beams subjected to combined bending and torsion and hence to arrive at a rational method of designing such members using ultimate load theory.

The influence of various factors such as the properties of concrete, the reinforcement, the mode of testing and the angle of twist on the general behaviour of beams, their mode of failure and their ultimate strength has been studied. There are mainly two modes of torsion failure in reinforced concrete rectangular beams : (i) direct shearing of concrete—this type of failure occurs suddenly ; and (ii) shearing of concrete accompanied by crushing in the compression zone—this type of failure is gradual and is most common for beams tested in combined bending and torsion.

As many as thirty-two beams were designed, cast and subjected to tests and the test results were analysed. The following are the important conclusions of the analysis. A reduction in the concrete crushing strength or the moment of tensile reinforcement increases the angle of twist appreciably. Inclusion of compression reinforcement reduces the angle of twist considerably. In general, an increase in the stiffness of the section reduces the angle of twist.

The type of torque-twist curve of a beam with web reinforcement is the same as that of a beam without web reinforcement. The beam with web reinforcement offers greater stiffness than beams without web reinforcement, the magnitude of the difference depending on the amount and type of the stirrups.

The ultimate strength of beams without shear reinforcement in torsion depends purely on the concrete properties, varies as $C_u^{\frac{2}{3}}$ (where C_u is the cube crushing strength) and shows a linear relationship with the tensile strength of concrete.

The addition of bending moment increases the torsional stiffness of the beam ; but it does not affect the ultimate torsional strength when the beam is subjected to combined bending and torsion.

In case of beams with stirrups, the M'_t/M_b ratio (where M'_t is the ultimate twisting moment for beams with web reinforcement) has definite influence on the ultimate torsional strength of the beam. The suggested equation shows good correlation with the test results.

The addition of web reinforcement does not affect the modes of failure. The ultimate twisting moment for beams with stirrups is interdependent on similar beams without web reinforcement. The main function of the web reinforcement seems to be to delay the final collapse and to restrict the widening of the diagonal cracks. The inclined stirrups and spiral type of web reinforcement act more effectively than vertical stirrups and increase the ultimate moment—V. Ramakrishnan & B. Vijayarangan, P.S.G. College of Technology, Coimbatore.

(*Contd from p. 1, col. 3*)

and DR K.S. CHARI, Deputy Director, Central Design & Engineering Unit, CSIR have been nominated Foundation Members of the Andhra Pradesh Akademi of Sciences, Hyderabad.

SHRI G.S. CHOWDHURI, Deputy Director-in-charge, CMERI, Durgapur, has been nominated a member of the Engineering Council of ISI.

SHRI P.I.A. NARAYANAN, Officer in-charge (Ore-dressing) and SHRI G.V.S. IYER, Senior Scientific Officer, Grade I, NML, Jamshedpur have been nominated to serve as chairman and member respectively of the Ores and Raw Materials Sectional Committee of ISI.

DR H.S.R. DESIKACHAR, Senior Scientific Officer, CFTRI, Mysore, has been nominated a member of the Technical Advisory Committee for processing of cereals and pulses industry of the Khadi and Village Industries Commission.

SHRI S. MAJUMDAR, Chief Information Officer, CFRI, Jealgora, has been nominated corresponding Member from India for Fuel Abstracts Subscribers Advisory Committee, U.K.

DR H. L. UPPAL, Assistant Director, CRRI, New Delhi, has been elected a member of the the Council of the Indian Roads Congress.

SHRI A. BHARADWAJ, Senior Architect and SHRI P.N. GUPTA Junior Architect, CSIR, have been nominated principal and alternate members of the Terminology, Notations and Drawings Sectional Committee of ISI.

Dr Y. Nayudamma, Director, CLRI, Madras and Dr R.K.N. Iyengar, Deputy Director, CRRI, New Delhi were deputed to attend the Twenty-third Annual Conference of the Association of Principals of Technical Institutes held at the Alagappa Chettiar College of Technology, University of Madras, Guindy Madras, from February 7-9, 1964.

* * *

SHRI P.B. BHATNAGAR, Assistant Director and SHRI R. N. MISRA, Senior Scientific Officer, NML, Jamshedpur have been awarded Binani Gold Medal by the Indian Institute of Metals for the paper entitled "Thermal beneficiation of low grade chrome ore, part II—Solid state reduction". The paper was adjudged to be the best in the non-ferrous group published in the Transactions of Indian Institute of Metals.

SHRI K.P. KACKER, Junior Scientific Officer, CBRI, Roorkee, has been awarded the Ph. D. degree of the Banaras Hindu University for his thesis : *Physico-chemical properties of clays and clay minerals.*

SHRI K.N. MUNSHI, Senior Research Fellow in a CSIR research scheme at the Chemistry Department, Allahabad University, has been awarded the D. Phil. degree of the University for his thesis : *Studies in coordination chemistry.*

SHRI K. SUBBARAMAIAH, Senior Scientific Officer : Grade II, CSMCRI, Bhavnagar, has been awarded the Ph. D. degree of the Banaras Hindu University for his thesis : *Effects of chemicals including mutagens and radiations on* Fischerella muscicola (*Thuret*) *Gomont.*

Dr M. N. Qureshy

Dr Mohammed Nasee Qureshy, Pool Officer, appointed Assistant Director, National Geophysical Research Institute, Hyderabad, took charge on October 15, 1963.

Born in Delhi on Jan. 4, 1933, Dr Qureshy took his B.Sc. and M.Sc. degrees from Aligarh Muslim University, Aligarh in the years 1951 and 1953. Thereafter he proceeded to U.S.A. where he specialised in the field of Exploration Geophysics at the Colorado School of Mines. He was awarded the Doctor of Science degree in 1958. Later he was employed as a Research Associate in the Ohio State University, Columbus, Ohio, where he worked on geodetic applications of gravity data. From 1959 to 1962, he was employed as a Geophysicist in the Bear Creek Mining Company. He carried on research on gravity as applied to mineral investigations. As soon as he returned to India in March 1963, he was selected as Pool Officer to work in the Geological Survey of India.

Dr Qureshy is a Member of the Society of Exploration Geophysicists, U.S.A. and the American Geophysical Union. He is a Fellow of the Geological Society of India, Member of the Operational Research Society, India, and Member of the Working Group on Coastal & Nearshore Oceanography. Dr Qureshy has published a number of research papers.

P A T E N T S

Filed

91085 : *A process for the disproportionation of alkyl benzene*—G. Shankar, Pierre Duhaut & Gerard Follain, IIP, Dehra Dun.

91411 : *A new soil sampler*—A.K. Deb & V.S. Aggarwal, CBRI, Roorkee.

91412 : *Manufacture of 2, 3-hydroxynaphthoic acid from 2-naphthol in the presence of a dispersent*—P.G. Phadtare, K.R. Srinivsan, B.A. Baliga, M.G. Kotasthane & L.K. Doraiswamy, NCL, Poona.

91430 : *Improvements in or relating to manufacture of reconstituted mica*—Atma Ram & S. B. Roy, CGCRI, Calcutta.

91151 : *Isolation of a substance possessing powerful respiratory stimulant action from* Prgnos pabularia *Lindl*—I.C. Chopra, K.S. Jamwal, K.L. Handa & V.P. Mahajan, RRL, Jammu.

U.K.

49058 : *Processing of dry ready-to-wet sausage casings from cattle, goat, sheep, pig and other mammalian intestines*—S. K. Barat, CLRI, Madras.

Accepted

82303 : *A guide for making holes with augers*—S. Chandra & A.K. Deb, CBRI, Roorkee.

85787 : *Improvements in or relating to the manufacture of rods with core and shell of different materials*—G. D. Joglekar & C.L. Verma, NPL, New Delhi.

Sealed

77080 : *A process for the preparation of ambrettolide*—S.D. Sabnis, H.H. Mathur & S.C. Bhattacharyya, NCL, Poona.

USA

U. S. No. 3116026 (Indian Pat. No. 58597) (Application No. 784138) : *Dirigible lamp assembly for vehicles*—C.R. Gupta, NPL, New Delhi.

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CSIR NEWS

VOL. 14 FEB. 24, 1964 : PHALGUN 5, 1885 No. 4

TEN YEARS OF CECRI, KARAIKUDI

January Twenty-second, 1964 was an important date in the annals of the Central Electrochemical Research Institute, Karaikudi. It marked the tenth anniversary of the establishment of the Institute. The function was inaugurated by Dr Zakir Husain, Vice-President of India and presided over by Shri Bishnuram Medhi, Governor of Madras. A special feature of the celebrations was a two-day seminar on 'The Role of Electrochemical Industries in the Economic Development of India', inaugurated by Prof. Humayun Kabir, Union Minister for Petroleum & Chemicals. Altogether sixteen papers from industries and the staff of the Institute were presented in this seminar. A portrait of the late Dr J. C. Ghosh was also unveiled on this occasion by Smt. Umayal Ramanathan, daughter of late Dr RM. Alagappa Chettiar.

The Institute was kept open to public on Jan. 24-25, 1964. To mark this occasion a brochure highlighting the various activities of the Institute during 1953-63, has been released.

Meeting

The Executive Council of CFRI, Jealgora, will meet on March 14, 1964, under the Chairmanship of Shri C. Subramaniam, Union Minister for Steel, Mines and Heavy Engineering.

Symposium

A symposium on "*Nucleic Acids-Structure, Biosynthesis and Functions*" was held at Regional Research Laboratory, Hyderabad, from, Jan. 16-23, 1964. Dr S. Husain Zaheer, Director-General, Scientific and Industrial Research, and 34 special invitees including 21 from abroad and 100 scientists from over 50 educational and research institutions in India attended the Symposium. Amongst the invitees from abroad

(*Contd on p. 2 col. 3*)

CECRI, KARAIKUDI—Prof, Humayun Kabir inaugurating the Industrial Seminar, (left to right) Dr Zakir Husain, Shri Bishnuram Medhi and Prof. K.S.G. Doss

Shri A.J. Kidwai

Shri A.J. Kidwai, Secretary, CSIR, on his appointment as Educational and Scientific Adviser to the High Commissioner for India in U.K. relinquished charge of his post with effect from Feb. 19, 1964.

Shri A.K. Mustafy

Shri Ashoke Kumar Mustafy, Officer-on-Special Duty, CSIR Secretariat has taken over as Secretary, CSIR, with effect from Feb. 19, 1964 vice Shri A.J. Kidwai.

Born on June 27, 1919, Shri Mustafy was educated at Simla, Delhi and Allahabad. He had a very distinguished academic career and secured the first place amongst all honours candidates in the Arts and Science faculties of the University of Allahabad in 1939 and received the Vizianagram and Jubilee Scholarships, and the Jubilee Gold Medal. In his post-graduate course also he stood first amongst all M.A. and M.Sc. candidates of the same University in 1940 and received the Cox Vidyant and Jubilee Gold Medals.

Shri Mustafy started his career as a lecturer in Mathematics in the St Stephen's College, Delhi. He later served in the Posts and Telegraphs Department and then at General Head Quarters, India. He was selected to the Indian Administrative Service in 1948 and served as City Magistrate in Allahabad and Meerut, and later District Magistrate, Pilibhit in 1951. During 1954-56 he served as Deputy Commissioner, Ajmer, from where he was deputed to the Central Secretariat of the Government of India as Deputy Secretary in the Ministry of Natural Resources and Scientific Research. Since then he has been in close association with scientific research in the country. In November 1959 he was appointed Administrative Officer in the National Physical Laboratory. At the NPL, in

(*Contd on p. 4, col. 1*)

BRIEFS

CFRI, Jealgora

The Pressure Gasification Plant (Cap. 0.8 ton of coal/hr) of CFRI, will be inaugurated by Shri M.C. Chagla, Union Minister for Education, on March 15, 1964.

The Institute participated in an Exhibition on 'Display of Patents and Designs', organized by the Science and Technology Society, under the aegis of Defence Science Laboratories, Kanpur, during Jan. 18-24, 1964.

CSMCRI, Bhavnagar

The Central Salt and Marine Chemicals Research Institute, Bhavnagar, has been recognized as a Centre for conducting research leading to the Doctorate degree by Sardar Vallabhbhai Vidyapith, Vallabh Vidyanagar, Dist. Kaira, and the following Universities : Bombay, Karnatak, Andhra, Punjab, Maharaja Sayajirao of Baroda, and Banaras.

Visits

Dr A.N. Khosla, Governor of Orissa visited the CFRI, Jealgora, on Feb. 9, 1964. Dr A. Lahiri, Director of the Institute conducted him round the pilot plants and apprised him of the researches being carried out. He showed keen interest in the new process of briquette carbonization for obtaining metallurgical fuel from non-coking coals and conversion of coal to nitrogenous fertilizers.

Prof. David C. Hazen of the Forrestal Research Centre, Princeton University, visited NAL, Bangalore on Jan. 23, 1963.

Mr Mgr. Inz. Jerzy Kasparek, Dyrektor. Kopalni Myslowice and Dr Inz. Tadeusz Opolski, Politechinka Czestochowska, Poland, visited CMRS, Dhanbad, on Jan. 31, 1964. They showed interest in the type of work done at the station.

Dr E.E. Longhurst, of the Royal Armament Research & Development Establishment, Kent, and Mr H.G. Cole of the Ministry of Aviation, London, both experts on corrosion, visited the CECRI, Karaikudi, on Feb. 3, 1964. On Feb. 4, two lectures, one on *Atmospheric corrosion by trace amounts of organic acids*, by Dr Longhurst, and another on *Protection of very strong steel—Hydrogen embrittlement* by Mr Cole, were also arranged for the benefit of the staff of the Institute.

CECRI, Karaikudi, 1953-63

This is the title of a brochure brought out by CECRI, to commemorate the tenth anniversary of its establishment. It brings together the research work done by the Institute during this period, in the fields of Electrothermics, Electrowinning and Electrodeposition, Inorganic & Organic Chemicals, Anodization, Electrode Kinetics, and Corrosion. The brochure also brings out information in respect of the pilot plants installed (such as for the production of lead dioxide electrodes, potassium perchlorate using lead dioxide and platinum electrodes, etc.) and the type of equipment available in the Institute for various specialized works.

(contd from p. 1, col. 1)

(USA—10, W. Germany—4, U.K.—3, France—2, Japan—1, and Israel—1) there were a number of distinguished scientists like Dr F.H.C. Crick, F.R.S., N. L., from Cambridge, U.K.; Prof. G. Schramm, Max Planck Institute, Tubingen, W. Germany; Dr C. Heidelberger, University of Wisconsin, U.S.A.; Dr S. Benzer, Purdue University, U.S.A. and Prof. J.A.V. Butler, F.R.S., London. In all 33 papers were presented by the participants. All the papers presented were original in content and embodied the latest research findings in the field. The symposium was the first of its kind ever held in India in the field of Biological Sciences both in respect of the subject matter and representation of renowned scientists.

A brochure (87 pp.) was brought out on this occasion giving details of the programme, abstracts of papers, list of participants and observers, biographical sketches of participants and other general information.

Along with the symposium, three popular talks were arranged under the joint auspices of Regional Research Laboratory, Hyderabad, Science Association, Association of Scientific Workers of India (Hyderabad), Andhra Pradesh Academy of Sciences, and Indian Medical Association (Hyderabad). The subjects of the lectures were : (i) 'Structure and Function of DNA-genetic material' by Dr F.H.C. Crick ; (ii) 'Viruses and Molecular Biology' by Prof. G. Schramm ; and (iii) 'Nucleic Acids and Cancer' by Dr C. Heidelberger.

RRL, HYDERABAD—Prof. G. Schramm (centre), Dr A. E. Mirsky (right) and Dr S. H. Zaheer, at the Nucleic Acids Symposium

RESEARCH PROGRESS

National Laboratories

CFRI, JEALGORA

New Resin for Demineralization of Water—A new and efficient anion-exchange resin has been developed from coal tar acids. The new resin is likely to have wide application in the demineralization of water. Demineralised water finds application in fine chemicals, pharmaceuticals and textile industry and is particularly suited for use in high pressure boilers. Development of the process to the stage of commercial exploitation is in progress.

CRRI, NEW DELHI

Simulation of road traffic on electronic computor—The simulation of traffic situations is difficult, if not impossible. But high speed digital computors can be used to provide under controlled conditions in the laboratory, data which can be utilized for determining optimum timing of traffic signals in order to reduce to minimum, delay to vehicles in crossing signalized intersections.

An electronic computor has been found suitable to simulate road traffic at a signalized intersection. In the mathematical model used, it is assumed that events such as the arrival or departure of a vehicle at the signalized intersection may occur only on a set of discrete and equally spaced time points. The traffic light pattern is periodic in time with each cycle represented by a sequence of or consecutive time-points designated as red points, followed by a sequence of g points, designated as green by a sequence of amber points. At either of these points there is a probability α that one vehicle will arrive, and probability $(1-\alpha)$ that no new vehicle will arrive, these probabilities being independent of the number of arrivals at any other time points.

NAL, BANGALORE

Allgaier Wind Electric Generator—The results of performance studies with the Allgaier wind electric generator at the Khapat Agricultural Farm in Porbandar have been assessed.

The generator (d.c.) is of 6-8 kW. capacity at 220 V. It has three propellers, each 5 m. long ; these are of the variable pitch type and rotate when the wind blows from the generator side. The load is provided by d.c. motors which are coupled to centrifugal pumps to lift well water. The performance was compared with that of the 10 h.p. diesel generator, pumping well water at the farm.

The following data were collected and analysed : (i) Hourly values of electric energy as read from the kWh meter ; (ii) corresponding hourly values of water pumped as read from the water meter ; and (iii) mean values of wind speed during each hour as read from the anemograph.

Based on these, the economics of wind power generation has been worked out. The cost per kWh works out to 19 nP without battery and 45 nP with battery. The cost of pumping 1,000 gallons of water works out to 12 nP as against 35 nP in the case of the 10 h.p. diesel engine working alongside the wind electric generator–S.P. Venkiteshwaran & D.V.L.N. Rao.

NAL, Bangalore—6-8 kW, Allgaier Wind Electric Generator installation at Porbandar

Aerofoil Pressure Distributions at Transonic Speeds—The effect of shock-boundary layer interaction on aerofoil pressure distributions at transonic speeds has been investgated. A method of improving predictions of pressure distributions over two-dimensional aerofoils at transonic speeds by the inviscid theory, taking into account shock wave-turbulent boundary layer interaction as in the case of a flat plate, has been studied and applied to a non-lifting circular arc aerofoil of eight per cent relative thickness. The shock wave location, pressure distribution and drag coefficient have been calculated and compared with experimental and inviscid theoretical results. It has been found that the method gives results which are consistent with experimental results in various aspects.

The studies have been extended to take into account the effect of aerofoil curvature on the shock boundary layer interaction and aerofoil pressure distributions at transonic speeds for the circular arc aerofoil, when there is no shock induced separation. In this case it has been found that the upstream extent of interaction decreases with increase in shock upstream Mach number or more rearward shock positions. Due to this decrease in the upstream extent, the upstream Mach number is not much changed for an aerofoil thickness ratio of eight per cent. However, it appears that the effect will be of significance in the case of thinner aerofoils—D. Tirumalesa.

Research Papers

Ramaswamy, G.S. (CBRI, Roorkee)—Structural Engineering Research at the CBRI, *Indian Build.* Annu. No. (1963), 177.

Mirchandani, H.V. (CBRI, Roorkee)—Some common defects in Stone Masonary, *Indian Build.* Annu. No. (1963), 173.

Pandya, M.H. (CBRI, Roorkee)—Insulation of Buildings, *Indian Build.*, Annu. No. (1963), 129.

Mirchandani, H.V.—Building Pratcice and Productivity—Some aspects of research work at CBRI, Roorkee, *J. nat. Bldgs. Org.*, 1963, 11.

Bhat, V.V. & Bose, J.L. (NCL, Poona)—1-Phenyl 1-4-Cinnolones, *Chem. & Ind.*, (1963), 1930.

(*Contd from p. 1, col. 3*)

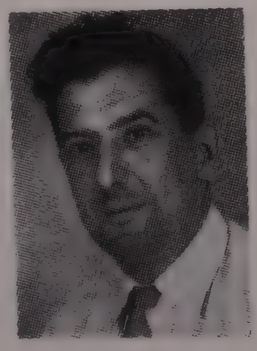
addition to his own administrative duties he took up work on certain research problems with the late Dr K.S. Krishnan F.R.S., Director, NPL. After the passing away of Dr Krishnan he has been working on some problems in higher mathematics. In May 1963 he was appointed Officer on Special Duty in CSIR Secretariat. In this capacity, he has been closely associated with the planning and coordination of scientific research, not only in the National Laboratories and Cooperative Research Associations but also in all research organizations in the country.

Shri Mustafy brings to bear on his new responsibility a rare combination of the qualities of an administrator and a scientist.

It is the first time in the annals of the council that a person already in the service of the council has been elevated to the position of the Secretary.

ILO Expert

Mr A.W.J. Layton, Principal Lecturer and Deputy Head of Department, Department of Mechanical Engineering at the Battesea College of Technology, London, joined the Central Mining Research Station, Dhanbad, on Jan. 13, 1964 as an ILO expert in "Testing of Materials", for a period of six months. During his tenure of office he will advise the Research Station in the installation and use of the material testing equipment procured by the Station under the United Nations Special Fund.



Mr Layton is a Graduate in Mechnical Engineering (1949) from the University of London, and has been an assistant examiner in 'Strength of Materials' of the University of London since 1959. As a member of the Material Sub-Committee of the Joint Airworthiness Committee of the Ministry of Aviation, U.K., he has been responsible for carrying out investigations on a large number of engineering aspects to establish design data and issue recommendations relating to aircraft design. Mr Layton has several published papers to his credit.

Mr Layton's main fields of studies are : Mechanical properties of 3 in. thick rolled aluminium alloy plate to specification DTD 5020, mechanical properties of high tensile alloy steels in the form of extruded bars in tension, compression and torsion, torsion properties of magnesium alloy tubes, strength of riveted joints, and static strength of lugs at room temperature. He is also an Associate Member of the Institution of Mechanical Engineers (U.K.).

STAFF NEWS

Appointment

SHRI S.P. AMBASTA, Pool Officer—Senior Scientific Officer : Grade I, to work as an Associate Editor for the 'Science Reporter', and also to look after the editorial work in the Hindi Unit of CSIR (Jan. 21, 1964).

Promotions

SHRI K. VENKATARAMAN, Manager, Publications & Information Directorate — Administrative Officer (Selection Grade), Publications & Information Directorate and Insdoc.

SHRI S.L. DAR, Under Secretary, CSIR, Secretariat — Administrative Officer (Selection Grade), NML, Jamshedpur.

SHRI B.S. SINHA, Administrative Officer, Grade I, IIP, Dehra Dun—Administrative Officer (Selection Grade), CFRI, Jealgora.

SHRI N. DUTTA, Junior Scientific Officer, CPHERI, Nagpur—Senior Scientific Officer : Grade II (Jan. 20, 1964).

SHRI M.A. RAMASWAMY, Engineer Officer I—Senior Scientific Officer : Grade I, NAL, Bangalore (Jan. 28, 1964).

SHRI H.C. SITARAM, Junior Scientific Officer—Senior Scientific Officer : Grade II, NAL, Bangalore (Jan. 28, 1964).

SHRI M. SURENDRAIAH, Junior Scientific Officer—Senior Scientific Officer : Grade II, NAL, Bangalore (Jan. 28, 1964).

SHRI S. NAGABHUSHANA, Senior Scientific Assistant—Senior Scientific Officer : Grade II, NAL, Bangalore (Jan. 28, 1964).

SHRI M.V.V. MURTHY, Senior Scientific Assistant—Senior Scientific Officer : Grade II, NAL, Bangalore (Jan. 28, 1964).

SHRI V. GOPALAKRISHNA, Senior Technical Assistant—Senior Technical Officer : Grade II, NAL, Bangalore (Jan. 28, 1964).

SHRI K. RAJAGOPALAN, Senior Technical Assistant—Senior Technical Officer : Grade II, NAL, Bangalore (Jan. 28, 1964).

SHRI S. SRINATHKUMAR, Senior Technical Assistant—Junior Scientific Officer, NAL, Bangalore (Jan. 28, 1964).

SHRI M.L.R. MURTHY, Senior Scientific Assistant—Junior Scientific Officer, NAL, Bangalore (Jan. 28, 1964).

SHRI A. KRISHNAN, Senior Technical Assistant—Junior Technical Officer, NAL, Bangalore (Jan. 28, 1964).

SHRI B.G. SURYANARAYANA, Senior Technical Assistant—Junior Technical Officer, NAL, Bangalore (Jan. 28, 1964).

DR G. N. SRIVASTAVA, Junior Scientific Officer—Senior Scientific Officer : Grade II, CDRI, Lucknow (Dec. 17, 1963).

SHRI SHAMBHU SARAN, Assistant—Purchase Officer, CDRI, Lucknow (Jan. 22, 1964).

DR SATINATH BANERJEE and SHRI M.M. SEN, Senior Scientific Officers: Grade II—Senior Scientific Officers Grade I, CFRI, Jealgora (Jan. 20, 1964).

Nominations

PROF. S. R. MEHRA, Director, CRRI, New Delhi, has been elected President of the Indian Roads Congress for the coming year.

DR A. LAHIRI, Director, CFRI, Jealgora, has been elected a member of the Council of the Institution of Engineers (India) for 1963-64.

DR ATMA RAM, Director, CGCRI, Calcutta, has been elected a member of the Council of the National Institute of Sciences of India for 1964.

DR H. A. B. PARPIA, Director, CFTRI, Mysore, has been nominated a member of the Advisory Board of the National Sugar Institute, Kanpur.

PROF. K.N. KAUL, Director, NBG. Lucknow, has been nominated as second representative of CSIR, in the Central Advisory Board of Biology for Zoological Survey of India and Botanical Survey of India.

SHRI DINESH MOHAN, Deputy Director-in-Charge, CBRI, Roorkee and DR H. L. UPPAL, Assistant Director, CRRI, New Delhi, have been nominated as CSIR representatives on the Soil Group under Fundamental and Basic Research Scheme of the Central Board of Irrigation & Power.

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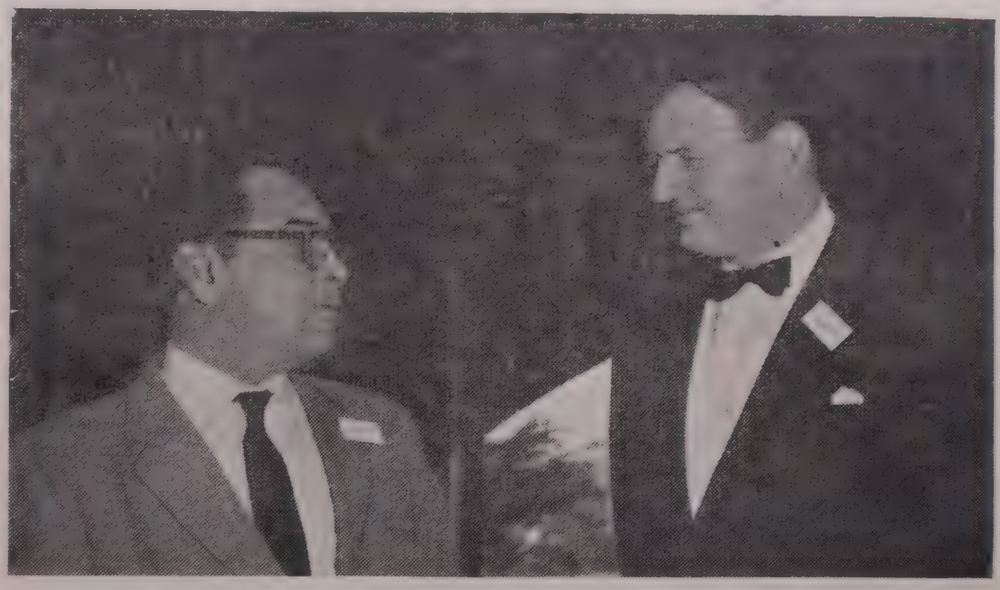
CSIR NEWS

VOL. 14 MARCH 9, 1964 : PHALGUN 19, 1885 No. 5

DR S. HUSAIN ZAHEER AT UNESCO CONFERENCE

Dr S. Husain Zaheer, Director-General, Scientific & Industrial Research and Shri A. Rahman, Officer on Special Duty, incharge of Survey and Planning of Scientific Research, Operational Research and Publications & Information Directorate, attended the Unesco-sponsored Conference of South and South East Asia National Scientific Research Organizations held in Canberra during Feb. 17-21, 1964. The purpose of the Conference was to define the field and formulate methods of executing national scientific policies within the region. More than 40 scientists and administrators from 18 different countries attended. Speaking at the Conference, Dr Zaheer said that international aid to science in developing countries should be based on practical needs and not on ulterior or theoretical considerations. He also emphasised that the basic need was not letters of direction on abstract problems but the education and utilization of potential and existing expertise.



Dr S. Husain Zaheer (left) with Mr L. Mattsson, Director of the South East Asia Science Cooperation Office, Djakarta at the Canberra Conference

MEETING

A meeting of the Executive Council of the National Aeronautical Laboratory, Bangalore will be held at the Laboratory on March 19, 1964 at 2.30 p.m.

STAFF NEWS

Appointments

DR S. H. CLERK, Pool Officer—Senior Scientific Officer : Grade I, CMRS, Dhanbad (Jan. 16, 1964).

SHRI K. S. GOPALA RAO—Civil Engineer, NCL, Poona (Jan. 23, 1964).

DR B. BASAVARAJU, Pool Officer, CMERI, Durgapur Senior Scientific Officer : Grade I, NAL, Bangalore (Feb. 3, 1964).

Promotions

SHRI K.M. AGARWALA, Under Secretary—Deputy Secretary, CSIR, New Delhi (Feb. 19, 1964).

SHRI B. R. SOMASEKHAR, Junior Scientific Officer—Senior Scientific Officer : Grade II, NAL, Bangalore (Jan. 28, 1964).

SHRI S. BALAKRISHNA, Senior Scientific Assistant—Senior Scientific Officer : Grade II, NAL, Bangalore (Jan. 28, 1964).

SHRI R. SRINIVASAN, Senior Technical Assistant—Junior Scientific Officer, NAL, Bangalore (Jan. 28, 1964).

DR A. K. GOSWAMI, Senior Scientific Assistant—Senior Scientific Officer : Grade II, CDRI, Lucknow (Feb. 6, 1964).

Nominations

DR NITYA ANAND, Assistant Director, CDRI, Lucknow, has been nominated a member of the Working Group on Fine Chemicals and Pharmaceuticals of the Heavy Industries Section, U.P.

DR J.S. AHLUWALIA, Assistant Director, IIP, Dehra Dun, has been nominated a member of the Site Selection Committee of the Ministry of Petroleum & Chemicals for the establishment of an oil refinery at Madras.

Prof. G.S. RAMASWAMY, Deputy Director, CBRI, Roorkee, was deputed to attend a symposium on 'The Application of Prestressed Concrete to Machinery Structures', held in London during Jan. 14-15 1964. He also attended the meeting of F.I.P. Commission on 'Pre-stressed Light Weight Concrete' at London.

DR I.M. CHAK, Senior Scientific Officer : Grade I, CDRI, Lucknow, has been deputed under Colombo Plan to Canada for one year for advanced training in 'Behavioural pharmacology with special reference to psychotropic agents in the experimental animals'.

SARVASHRI S.B. DESHAPRABHU, Production Officer & J.M. DATTA, Editor, Publications & Information Directorate, New Delhi, left for U.K. on Feb. 24, 1964 for 6 months training in production and editorial work under an agreement with the Pergamon Press, London.

DR R.P. DASS, Senior Scientific Officer : Grade II, CDRI, Lucknow, has been awarded a post-doctoral fellowship by the National Research Council of Canada.

BRIEFS

Geophysics relating to Earth's Crust

The symposium on Problems in Geophysics relating to the Crust of the Earth (*CSIR News*, Vol. 14, No. 2, p. 1) was held in the Geology Department, Osmania University, Hyderabad during Jan. 30-31, 1964. Dr K.R. Ramanathan, Director, Physical Research Laboratory, Ahmedabad, inaugurated the symposium. Dr M.S. Krishnan, former Director of the National Geophysical Research Institute, presided.

About 70 delegates from several universities, research and teaching institutions and government organizations participated. Prof. V.S. Mironov, Unesco Professor in Geophysics at the Osmania University and Mr Arthur F. Christensen, a Peace Corps volunteer at the Osmania University, also attended the symposium.

The symposium was held in three sessions : (i) Geophysical exploration and seismology ; (ii) Physical properties of rocks ; and (iii) Physical oceanography. In all, 35 papers were presented, 12 on geophysical exploration, 4 on seismology, 10 on physical properties of rocks and 9 on physical oceanography.

The observations and results reported and the discussions that followed the papers revealed the increasing interest evinced by a large number of organizations in the studies on the solid earth physics.

A popular lecture on Geophysical Education in U.S.S.R. was given by Prof. I.I. Gurvich, Visiting U.N. Professor in Geophysics at the Osmania University on Jan. 30, 1964.

Bearing Capacity of Piles

A three-day symposium on Bearing Capacity of Piles was inaugurated by Shri G. Pande, Vice-Chancellor, University of Roorkee, at the Central Building Research Institute, Roorkee on Feb. 24, 1964.

The scope of the symposium covered the following aspects of pile foundations ; (i) Penetration tests, soil properties and site conditions ; (ii) Load tests and settlement studies ; (iii) Model studies on piles ; (iv) Bored piles ; and (v) Design and construction of piles.

Twenty-eight papers (printed in advance) from leading soil engineering experts from U.S.A., U.S.S.R., U.K., Italy, France, Holland, Japan, Hungary, West Germany and Poland besides India were discussed in the five sessions. The symposium was attended by more than 200 engineers, research scholars and representatives from firms engaged in pile constructions. Dr D.J. Henkel of U. K., Prof. A. Mayer of France and Mr H. Mori of Japan attended the symposium. Prof. Mayer delivered a lecture on the importance of rock mechanics in the construction of buildings, dams and other structures and the use of atomic energy for exploration of soils and construction of canals.

An annotated Bibliography on Pile Foundations containing the abstracts and references of 214 papers on pile foundations published during the last two years was brought out.

NML Annual Report

The Annual Report of the National Metallurgical Laboratory, Jamshedpur for the year 1962-63 has been published. The 194-page report summarises the work carried out by the Laboratory on 86 main research projects, including nine projects in pilot plant stage. Progress made in industrial liaison, operational research and information services, besides patents filed and accepted and publications brought out, is included. Scientific papers published, investigations completed and research reports prepared by the Laboratory and the technical assistance rendered to industries are listed in three appendices.

Shri G. G. Sarkar

Shri Gour Gopal Sarkar, Senior Scientific Officer : Grade I, Central Fuel Research Institute, Jealgora, has been appointed on promotion Assistant Director with effect from Jan. 16, 1963.

Shri Sarkar (*b.* 1922, Bolpur) received his early education at Santiniketan and graduated from the Calcutta University in 1943 with Honours in Chemistry.

Shri Sarkar joined the Council in 1947 as a Research Assistant and was associated with 'Washability studies of Indian coals'. He was assigned to the Central Fuel Research Institute as a Senior Scientific Assistant in 1948 and promoted as Junior Scientific Officer (in 1952) in charge of the Coal Washing Section. He became Senior Scientific Officer : Grade II in 1954 and Senior Scientific Officer : Grade I in 1958.

(Contd on p. 4, col. 1)

CGCRI, Calcutta—Sir Charles F. Goodeve, member, CSIR Reviewing Committee (third from left) examining a chunk of glass during his visit on Feb. 5, 1964

RESEARCH PROGRESS

National Laboratories

CDRI, LUCKNOW

Studies on Intrauterine Contraceptive Devices—Intrauterine contraceptive devices are of considerable interest as they constitute a simple and effective method for limiting fertility. However, experimental data regarding the nature of long-term influence of such foreign bodies on the uterine tissue and their precise mode of contraceptive action are needed. Hence investigations on experimental animals have been undertaken using bi-cornuate uterus of rats and rabbits, this being convenient for the study because one horn can be fitted with a device while the contralateral one can serve as the control. Preliminary results indicate that these devices act by interfering with the implantation process rather than by blocking the passage of spermatozoa through the uterus or tubal migration of ova.

CGCRI, CALCUTTA

Refractory Cements for Electrical Heating Appliances—Investigations were undertaken to develop a suitable cementing material for use in electrical heating appliances like hot plates and immersion heaters. Amongst the materials studied were talc, calcined magnesite, calcined alumina, silica (quartz), calcined kyanite, sillimanite, calcined china clay grog and calcined fire clay grog with and without bonding materials like Ciment Fondu, Portland cement, sodium silicate, etc. To determine the suitability of these materials for the purpose, their electrical resistances were measured at different temperatures up to 600°C. by a small gadget designed at the Institute. Talc was found to be the best cementing material, while Ciment Fondu appeared to be most suitable as bonding material. These materials may, however, be used for immersion heaters where the temperature is not supposed to exceed 100°C. Talc, calcined kyanite, sillimanite or calcined magnesite have been recommended in order of priority for hot plates depending on their maximum working temperature. Magnesium oxysulphate was found to be better than others for cementing calcined magnesite. Portland cement is suggested for use as a bonding material only when the working temperature of the appliances is comparatively low.

NAL, BANGALORE

Application of Rheoelectrical Analogy Technique—This technique is being used to solve potential flow problems occurring in aerodynamics and structures. The technique has been applied in studies pertaining to the design of two-dimensional contraction cones for low-speed tunnels.

A 5-ft × 5-ft two-dimensional electrolytic tank has been built using granite slabs with plane base polished to a high degree of accuracy. The analogy between the velocity potential in an inviscid incompressible flow and the electric potential in a continuous conductor (water in this case) was established for two two-dimensional contractions (ratio 10, angles 45° and 60°). A model of the precalculated contraction, made of an insulating material, was set in the tank and a potential difference was set up between the inlet and the outlet. The electric potentials along the contour were measured at closely spaced points and the potentials differentiated graphically to obtain the velocity distribution. The experimental results were found to agree closely with theoretical results which involve tedious calculations and require high-speed computers. The method is economical and gives a first approximation to the actual flow conditions existing in the tunnel contraction. This method also eliminates the need for elaborate and costly wind tunnel tests for a preliminary design. The design can further be tested and developed using a wind tunnel—N.R. SUBRAMANIAN.

Research Papers

NARAYANAN, U.H. & SUNDARARAJAN, K. (CECRI, Karaikudi)—An improved technique in impedance titration. *J. electroanal. Chem.*, **6** (1963), 397.

SHENOI, B.A., VIJAYALAKSHMI, (MRS) K. & INDIRA, (MISS) K.S. (CECRI, Karaikudi)—Electropolishing aluminium: Optimum conditions for alkaline baths. *Metal Finish.*, **61** (1963).

MANGALAM, (MISS) MARY JULIANA, & PAUL, Nityanandan J. (CECRI, Karaikudi)—Nuclear and solar batteries. *Curr. Engng Prac.*, **6** (2) (1963) 1.

NAL, Bangalore – 5 ft × 5 ft Electrolytic Tank for Rheoelectrical Analogy Technique built at the Laboratory

(*Contd from p. 2, col. 3*)

Shri Sarkar was deputed to U.S.A. for six months in 1956 under a T.C.M. programme to study the design and operation of coal washing plants and was awarded a 'Certificate of Merit' by the U. S. Bureau of Mines. In 1960, he went to Poland and Yugoslavia as a member of the technical delegation team sent by the Government of India. As a delegate from India, Shri Sarkar attended the Fourth International Coal Preparation Congress at Harrogate (U.K.) in 1962 and also visited France, Belgium, Holland, West Germany and Poland to study the latest developments in the field of coal washing and preparation.

Shri Sarkar has assisted in the planning of different coal washery projects in India both in the public and private sectors and has been responsible for conducting guarantee and performance tests of a number of washeries already commissioned. He also served as a Specialist Correspondent on Coal Washing and Preparation for the Commonwealth Committee on Fuel Research.

Some of his original contributions on coal preparation have received wide appreciation. These include development of an index to compare and correlate the washability characteristics of different coals, an improved efficiency coefficient to define the sharpness of separation of a washery bath, an apparatus to carry out the float and sink tests of fine coal in the laboratory (being adopted in West Germany), and introduction of grids in flotation cells to obtain higher recovery of clean concentrates.

Shri Sarkar has compiled about a dozen project reports and has published more than eighty research and review papers in Indian and foreign journals. He is the author of a booklet, 'Koyla' (Bengali), published by Viswa-Bharati, Santiniketan.

Shri B. K. Mazumdar

Shri B. K. Mazumdar, Senior Scientific Officer : Grade I, Central Fuel Research Institute, Jealgora, has been appointed on promotion Assistant Director in charge of the Division of Fundamental Studies on Coal and Coal Chemistry with effect from Jan. 16, 1964.

Shri Mazumdar (*b.* February 1, 1925) had a brilliant career throughout and took the degrees of B.Sc. (Hons) in chemistry (1944) and M.Sc. in applied chemistry (1946) from the Presidency College and the University College of Science and Technology, Calcutta respectively. In 1947 he joined the Indian Institute of Science, Bangalore, as a research assistant and worked for a year under the guidance of late Dr P.C. Guha on a CSIR research scheme, Production of phenol. Shri Mazumdar also served for short periods as a lecturer in chemistry successively at Midnapore (West Bengal) and at Vidyasagar College, Calcutta.

Shri Mazumdar joined the Central Fuel Research Institute in 1949, and for the first seven years worked mainly in the Regional Coal Survey Stations where his extensive studies on coals, both Indian and foreign, led to a new interpretation of proximate analysis based on an early discovery made by him on the hitherto unknown role of moisture in coal. This made possible a break-through in the field of coal systematics, coal evaluation, coal grading as well as coal petrology based on proximate analysis.

Shri Mazumdar was promoted as Junior Scientific Officer in 1955, Senior Scientific Officer : Grade II in 1957 and as Senior Scientific Officer : Grade I in 1959.

Since 1956, an active school of thought bearing mostly on the findings of coal systematics (which has been recognised internationally as the Indian school) has been put forth by him on the constitution of coal based on the oxidation, dehydrogenation, pyrolyses and many other technical reactions on coal. He has published thirty-six papers on the systematics and the constitution of coal and has taken two patents relating to ion-exchangers and smokeless coal.

He presented many scientific papers before International Conferences on Coal Science in Europe and U.S.A. In 1960, on an invitation by the Union Carbide European Research Associates, he attended the Third Round Table Conference on Coal Science at Brussels and presented two papers on the structural aspects of coal. He also visited various coal research establishments in Belgium, Holland, France and U.K.

He is a member of the Committee for Coal Codification and an alternate member of the Sub-Committee for Coal Terminology and Classification of the Indian Standards Institution.

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6.	Names and addresses of individuals who own the newspaper and partners or shareholders holding more than one per cent of the total capital.	

I, S. A. Chari, hereby declare that the particulars given above are true to the best of my knowledge and belief.

Date : March 9, 1964

(Sd) S. A. Chari
Signature of Publisher

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CSIR NEWS

VOL. 14 MARCH 23, 1964 : CHAITRA 3, 1886 No. 6

UNESCO CONFERENCE PROCEEDINGS

The Third Conference of Representatives of National Scientific Research Organizations of the South and South East Asia Regions held at Canberra during Feb. 17-21, 1964 (*CSIR News*, Vol. 14, No. 5, p.1) was conducted in the following eight sessions : (i) National Science Policy and organization of scientific research in countries of the region (Chairman : Dr S. Siddiqui, Pakistan) ; (ii) Relation between science and government (Chairman : Dr C.G. Manuel, Philippines) ; (iii) Unesco activities in the region (Chairman : Dr N.G. Baptist, Ceylon) ; (iv) Investments in research (Chairman : Dr J. B. Alexander); (v) Research and economic development (Chairman : Dr W.M. Hamilton. New Zealand) ; (vi) Investment in scientific research (Chairman : Dr S.H. Zaheer, India); (vii) Research organization and administration (Chairman : Dr S. Tomonaga, Japan); and (viii) Regional collaboration in scientific research & training and documentation.

The discussions at the conference were supported by a large number of background papers on each subject and special reports from consultants. The discussions revealed that (i) the levels of scientific and technological developments in the region vary, for example Japan and India on the one side and Vietnam and Thailand on the other with countries like Indonesia and Pakistan falling in between, and (ii) Indian science and technology need not be only in a position of receiving aid and that it can also be of assistance for the countries of the region in regard to their development.

Amongst other points discussed, shifting of the two Science Co-operation Offices at New Delhi and Djakarta to Bangkok was particularly a subject of controversy.

The following are some of the important resolutions passed at the conference : (i) Special units for the collection and analysis of data in each country should be created and attached to science policy making body ; (ii) Data collected on research and development should be comparable ; and (iii) Special attention should he paid to the development of scientific and technical cadre for scientific personnel

The success of the conference was largely due to the hosts, C.S.I.R.O. and the continuing efforts of their staff.

Scientific Instruments Service Facility

A service facility for portable laboratory-type scientific instruments (electrical, electronic, electromechanical or optical), excepting appliances, has been organised by the National Physical Laboratory, New Delhi. Hospitals, public and semi-public institutions, industrial establishments and other users of such equipment are invited to make use of this service which is on payment basis. Proper use of new equipment will also be explained to users.

Instructions regarding sending of instruments for servicing, etc. may be obtained from the Officer in charge, Instrumentation & Servicing, Room No. 222 (Phone 57161, extension 36). National Physical Laboratory, Delhi-12.

Shri A.K. Mustafy

Shri A. K. Mustafy, I. A. S., Secretary, Council of Scientific & Industrial Research has been appointed *ex officio* Joint Secretary to the Government of India in the Ministry of Education with effect from Feb. 19, 1964.

STAFF NEWS

Appointments

DR N. K. GARG & SHRI ABDUL WASEY KHAN—Senior Scientific Officers : Grade II, CDRI, Lucknow (Dec. 5, 1963 & Feb. 12, 1964 respectively).

DR R. N. MUKHERJEE—Pool Officer, NCL, Poona (Jan. 9, 1964).

DR KUNAL SAHA—Pool Officer, IIBEM, Calcutta (Feb. 1, 1964).

Promotions

DR A.B. SEN, Senior Scientific Officer : Grade II—Senior Scientific Officer : Grade I, CDRI, Lucknow (March 1, 1964).

SHRI CHANAN SINGH & DR PREM SAGAR, Junior Scientific Officers—Senior Scientific Officers : Grade II, CDRI, Lucknow (March 1, 1964).

SARVASHRI J. S. SHARMA & MOHAN RAI—Senior Scientific Officers : Grade II, CBRI, Roorkee (Feb. 17,1964).

Resignations

SHRI B. CHAKRABORTY, Senior Scientific Officer, CMRS, Dhanbad (Feb. 1, 1964).

DR R.S. SINGH, Pool Officer, NCL, Poona (Feb. 12, 1964).

Nominations : ISI

DR B.R. NIJHAWAN, Director, NML, Jamshedpur—Chairman, Methods of Physical Tests Sectional Committee, and member, Alloy Steels and Special Steels Sectional Committee.

SHRI BALDEV SINGH, Industrial Liaision and Extension Officer, & DR J.C. SRIVASTAVA, Officer on Special Duty (Extension), CSIR, New Delhi—Principal and alternate members respectively of the Consumer Products Division Council.

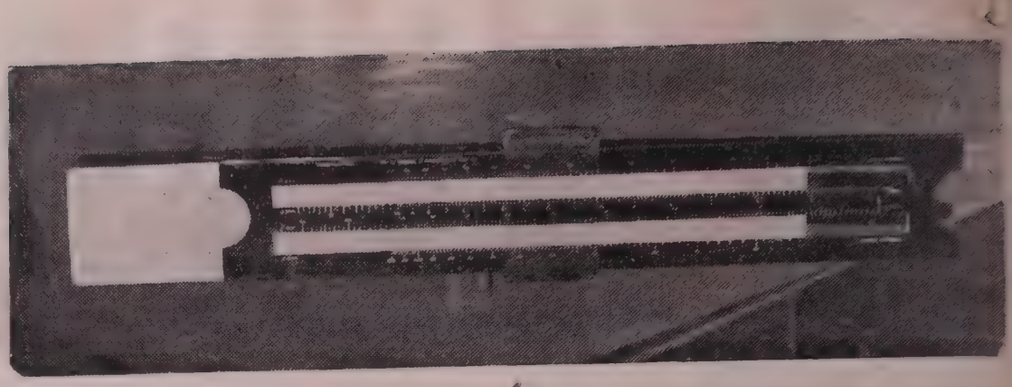
MAJ. N.V.R. IYENGAR, Assistant Director, CFTRI, Mysore—Member of the Panel to consider the suitability of polyethylene as as packing material for pesticides.

Nominations : General

SHRI M.H. PANDYE, Senior Scientific Officer, CBRI, Roorkee, has been nominated a member of the Panel for Science Education in Secondary Schools set up by the Planning Commission.

(*Contd on p. 4 col. 1*)

B R I E F S



SITRA, COIMBATORE—Sitra Metric Slide Rule designed by the Association. The slide rule can be used to convert English hank or count to French hank or count (Nf), turns per inch to turns per metre and English twist multiplier to metric twist multiplier and *vice versa* ; it is also possible to convert fibre weight from micrograms per inch into millitex ; one side of the slide rule is for use with roving and the other is for yarn.

Fourth Technological Conference

The Fourth Technological Conference of South India Textile Research Association (*CSIR News*, Vol. 14, No. 2, p. 1) held during Feb. 19-20, 1964 was inaugurated by Shri G.K. Devarajulu, Deputy Chairman, Indian Cotton Mills' Federation, and presided over by Shri S. R. P. Ponnuswamy Chettiar, Vice-Chairman, Southern India Mill-owners' Association.

Shri K. Srinivasan, Director, reviewing the activities of SITRA referred to the three areas of work, namely upgrading of Indian cottons by combing, survey of inter-firm comparison of costs and profits and training of technical personnel, and the Symposium on Man-made Fibres which had been arranged to supplement SITRA's work.

Shri Ponnuswamy Chettiar, in his presidential speech, referred to the need for growing Sea Island cotton in the country and requested that the study of inter-firm comparison of costs and profits should be made an annual feature just like the productivity surveys made by SITRA so that managements could get an opportunity to critically evaluate and compare their performance with others in the same line of business and that standards should be set for the losses sustained due to idle machine capacity, if inevitable.

Inaugurating the conference, Shri Devarajulu pointed out the difficulties faced by the textile industry and the urgent need for research on machinery design. He referred to the controversy over man-made fibres and natural fibres and pointed out that most of the advanced countries were using about 30 per cent of man-made fibres and 70 per cent of cotton while India was consuming only 6 per cent of man-made fibres as against 94 per cent of cotton. He felt that if man-made fibres in this country were to establish themselves and command a permanent market, it must be on the basis of consumer appeal, quality, durability and price.

Seven papers were presented in three sessions, presided over by Mr K. Frost, Sarvashri C.R. Lingiah and K. Sundaram.

A metric slide rule designed by SITRA was released by Shri Devarajulu on the occasion. The slide rules are supplied free of cost by Textool Co. Ltd and will be distributed by SITRA to its member mills.

Symposium on Bearing Capacity of Piles

The proceedings of the *Symposium on Bearing Capacity of Piles* (*CSIR News*, Vol. 14, No. 5, p. 2) have been published as a special number of *Cement & Concrete*. The 320-page publication (Royal 8 vo, Price Rs 15-00) contains twenty-six papers under the following five sessions ; (ii Penetration tests, soil properties and soil conditions (4 papers); (ii) Load tests and settlement studies (6 papers); (iii) Model studies on piles (6 papers); (iv) Bored piles (5 papers); and (v) Design and construction (5 papers).

Two more papers together with discussion on all the papers presented will be published in another volume.

Visits

Dr Hugo Boyko and Dr (Mrs) Elisabeth Boyko, pioneers in the investingations on the utilization of sea water for the cultivation of plants, visited the Central Salt and Marine Chemicals Research Institute, Bhavnagar during Jan. 1964.

Dr A. N. Khosla, Governor of Orissa, visited the Central Mining Research Station, Dhanbad on Feb. 9, 1964.

Mr K. Totoki, Director, Mippon Gaishi Kaisha Ltd, Mizuho, Magoya, Japan (along with four colleagues) visited the Central Glass and Ceramic Research Institute, Calcutta on Feb. 1, 1964.

BITM Popular Lecture

Shri Kamalesh Ray, Deputy Director, National Register Unit, CSIR, New Delhi, delivered popular lectures with practical demonstrations on Hand-made Telescope at the Birla Industrial and Technological Museum, Calcutta, in Bengali on Feb. 25 & 26, 1964 and in English on Feb. 27 & 28, 1964. Shri Ray said that the hobby greatly helped the understanding of astronomy and science and brought out technical skills needed for precision instrumentation. He demonstrated the method of grinding concave mirrors for making Newtonian telescopes and how to fit them up.

Doctorate Awards

SHRI K. K. LAROIA, Senior Scientific Officer : Grade II, CECRI, Karaikudi—Ph.D.(Poona University); thesis : *Studies on magnetic and structural properties of some hexagonal ferrites.*

SMT. ARATI SARKAR, Junior Research Fellow,—D. Phil. Sc. (Calcutta University); thesis: *Studies on the development of improved strains of Aspergillus niger for citric acid production.*

SHRI S. K. MEGHAL, Senior Scientific Assistant, CPHERI, Nagpur—Ph.D.(Nagpur University): thesis : *Studies on the biosynthesis of thiamine.*

SHRI N. S. RAJAGOPAL, Senior Scientific Assistant, RRL, Hyderabad —Ph. D. (Osmania University); thesis : *Occurrence, separation and analysis of fatty materials.*

RESEARCH PROGRESS

CDRI, LUCKNOW

Stabilization of Thiamine—The effect of some salts used in pharmacy on the stability of thiamine hydrochloride (vitamin B_1) and thiamine mononitrate in 67 per cent (w./w.) syrup when stored at 37°C. for 6 months, the influence of varying compositions of syrup-water, glycerol-water and syrup-glycerol solvent systems on the stability of thiamine mononitrate stored at 45°C. for 3 months, and the stability of thiamine in the presence of vitamins B_2, B_6 and niacinamide in 75 per cent glycerol, 67 per cent (w./w.) syrup and syrup-glycerol-water (2:2:1) vehicles at *p*H 4 stored at 37°C. for 8 months, have been studied. The results of the study are as follow: (i) Thiamine is compatible with most of the salts with the exception of ferric ammonium citrate, sodium citrate and sodium metabisulphite; (ii) thiamine keeps well in pure water and syrup is a better vehicle than pure glycerol; the stability of thiamine is highest at *p*H 2 and decreases with increasing *p*H; cent per cent of this vitamin is retained in water either at *p*H 2 or 4; at the latter *p*H the best combinations of vehicles are 5-80 per cent of glycerol in water and 10-80 per cent of glycerol in syrup; and (iii) the formulations in 75 per cent glycerol and in syrup and syrup-glycerol-water vehicles are stable if 0.1 per cent of cysteine hydrochloride is added as stabilizer.

CBRI, ROORKEE

Noise Absorption using Functional Sound Absorbers—The use of functional sound absorbers of pyramidal and rectangular shapes for reducing noise has been studied. The study has shown that these absorbers provide a large amount of acoustical absorption in a relatively small area. Measurements of sound absorption made in a reverberation chamber after optimization of the shapes, total surface area, density and spacing between the units have shown that the pyramidal units are slightly more absorbing than the rectangular ones.

These absorbers have been installed in a cafeteria and a systematic study of the noise reduction has been made. Conditions for satisfactory speech communication across distances of 0.3-1.2 m. have been achieved with 19 functional sound absorbing units hung in space from the ceiling when the floor is covered with carpets. The proper criterion for background noise in noisy areas such as the cafeteria has been established making use of noise criteria curves.

Sponsored Research

Studies on Electron Spin Resonance of Crystalline Compounds—The electron spin resonance (ESR) in single crystals of monomethylammonium copper (II) chloride, $(NH_3CH_3)_2CuCl_4$, was investigated at room temperature with a conventional transmission cavity spectrometer, using microwaves of frequency 9625 Mc. The single crystals of the complex were grown in the laboratory from mixed solutions of methylamine hydrochloride and copper chloride in the ratio 2 : 1. The crystalline electric field in this complex for the ion Cu^{2+} $3d^9$ was studied from the variation of the spectroscopic splitting factor, *g* with orientation of the single crystal with respect to the magnetic field. Assuming an octahedral surrounding for the Cu^{2+} ion in this orthorhombic crystal (4 Cu^{2+} ions in unit cell), the direction of tetragonal axis with respect to the crystallographic axes was obtained. The Cu^{2+} ion surrounded, probably octahedrally, by chlorine neighbours reveals considerable exchange forces with the other Cu^{2+} ions. The exchange frequency as estimated from the shape of the narrowed resonance line is of the order of 0.1 cm.$^{-1}$

CBRI, Roorkee—Functional Sound Absorbers hung in a cafeteria

The crystalline electric field in another complex of copper (II), cupric monoethylenediamine chloride ($CuenCl_2$) was also studied by electron spin resonance at room temperature and at 9625 Mc. Single crystals of the compound were grown from mixed aqueous solutions of copper chloride and ethylenediamine. The *g* tensor obtained experimentally for this monoclinic crystal revealed that the 2 Cu^{2+} ions in the unit cell are having their tetragonal axes nearly along the crystallographic *b* axis. The two octahedrons are parallel to each other and the Cu atom and the four nearest neighbours forming a plane lie parallel to the *ac* plane. The crystal being anhydrous shows considerable exchange interaction of the isotropic type. The estimated exchange frequency is of the order $J \approx 0.18$ cm.$^{-1}$ The *g* values correlated with the optical absorption peak of a solution sample show considerable covalency in the metal-ligand bonding.

The electron spin resonance of some copper (II) complexes (single crystals and powders) containing chlorine as neighbours was used in a comparative study. The exchange frequency in each salt was calculated by the theory of Anderson and Weiss. It was interesting that the exchange field H_{ex} in all these compounds and the exchange frequency *J* were nearly the same—R. RAJAN & R.S. KRISHNAN, Indian Institute of Science, Bangalore.

Research Papers

INDIRESAN, P. V. & SATAINDRA, (MRS) SASHIBALA (Roorkee University, Roorkee)—A series type d.c. negative resistance for analogue computers. *J. Brit. Instn Radio Engrs*, **26** (1963), 417.

SESHACHAR, B. R. & BAGGA, SHANTA (Delhi University, Delhi)—Cytochemistry of the Oocyte of *Loris tardigradus lydekkerianus* (Cabr.) and *Macaca mulatta mulatta* (Zimmerman). *J. Morph.*, **113** (1963), 119;

Cytology and cytochemistry of spermiogenesis in two dragonflies, *Ictinogomphus rapax* (Rambur) and *Pantala flavescens* (Fabricius). *J. Morph.*, **113** (1963), 267.

SARMA, D.S.R., RAJALAKSHMI, S. & SARMA, P.S. (Indian Institute of Science, Bangalore)—Studies on the reaction between nicotinamide and iodoacetic acid. *Biochim. biophys. Acta*, **78** (1963), 733.

RAJAN, R., KRISHNAN, R.S. & RAMASUBBA REDDY, T. (Indian Institute of Science, Bangalore)—Electron spin resonance in ethylenediamine complexes of copper (II) sulphate. *J. chem. Phys.*, **39** (1963), 1140.

STAFF NEWS

(Contd from p. 1, col. 3)

DR K.N. SINHA, Officer on Special Duty, CMRS, Dhanbad, has been nominated a member of the Advisory Committee on Stowing, Ministry of Steel, Mines and Heavy Engineering.

* * *

DR S. KUMAR, Senior Scientific Officer : Grade I, CGCRI, Calcutta, left for Canada on Jan. 6, 1964 for training in High temperature chemistry, under the Colombo Plan.

SHRI P.J. RAO, Senior Scientific Officer : Grade II, CRRI, New Delhi, has been deputed under the German Academic Exchange Service to Federal Republic of Germany to undergo one year's training in Soil mechanics and foundation engineering.

SHRI S. K. MAZUMDAR, Senior Scientific Officer, CMRS, Dhanbad, resumed duties on February 3, 1964 after undergoing ten months' training (under Colombo Plan) in U.K. in Instrumental methods of analysis.

DR S.H. ZAIDI, Deputy Director, CDRI, Lucknow, has been elected Member of College of Pathologists, England, in recognition of his researches in pathology and experimental medicine.

DR K.Y. SHRIKHANDE, Senior Scientific Officer : Grade I, CFRI, Jealgora, ha been elected a Fellow of the Institution of Chemists (India).

SHRI H. ALI, Junior Scientific Officer, CMRS, Dhanbad, has been elected a Fellow of the Mining, Geological and Metallurgical Society of India and Associate Member of Indian Institution of Chemical Engineers.

Shri E. Ehsanullah

Shri Ehsan Ehsanullah has been appointed Assistant Director, Regional Research Laboratory, Jorhat with effect from Jan. 18, 1964 and in-charge of the Laboratory since Jan. 31, 1964.

Born on Jan. 5, 1919 at Bareilly (U.P.), Shri Ehsanullah had his early education at Bareilly and Lucknow.

He served the G.I.P. Railway as Inspector of Works up to 1946 and in the same year proceeded to U.K. for higher studies. He studied as internal student of Battersea College of Advanced Technology, London, where he did a sandwich course leading to his successful completion of Corporate Membership of the Institution of Civil Engineers, London. He further specialised in Structural Engineering and obtained a post-graduate Diploma in Engineering Geology and Soil Mechanics.

After working for a few months on petroleum by-products experiments at the Shell Max Laboratory, he served the Structural Engineers, Ministry of Works, London for eight years, later part of which was devoted to site control on a security job.

In 1956 he was seconded to Ghana Works Service of Engineers, as Garrison Engineer, New Developments, Accra. Two years later, he was promoted Divisional Engineer. He was also Chairman,Departmental Tender Board, District Chairman of Trade Union Congress of Ghana and Secretary, Town Planning Committee.

As a nominee of the Government of Ghana, he attended the Engineers Conference held in London in 1960 and studied the works at Conventry Civic Aerodrome and Hammersmith Fly-over. His European tour took him to Denmark, Sweden and Italy, where he made a special study of planning, design and construction of schools and hospitals. Shri Ehsanullah was awarded a Merit Certificate of Service by the Government of Ghana. He was responsible for reorganising Mobile Maintenence of Trunk Roads for the Ministry of Works, North. He took keen interest in the training conferences for works, run by U.S.A. Technical Advisory Centre, Ashanti Region and was a visiting lecturer at the Kumasi Centre.

Shri Ehsanullah was elected Corporate Member of the Institution of Structural Engineers, London in 1955. He has published two reports : (i) Standards of construction related to roads, culverts and bridges; and (ii) A scheme for establishment of an engineering college in Northern Nigeria.

PATENTS

Filed

91327 : *Improvements in or relating to an apparatus for automatically recording progressive changes in weights with special reference to thermogravimetric determinations*—A.P. Chowdhury, K.P.S. Kumar & H.P.S. Murthy, NML, Jamshedpur.

91828 : *Improvements in or relating to the preparation of sintered silver electrodes for batteries*—P.B. Mathur & N. Karuppannan, CECRI, Karaikudi.

92275 : *Cinnamic acid amides of pharmacological interest*—P.B. Sattur, K. Bhanumati & G.S. Sidhu, RRL, Hyderabad.

92277 : *Improvements in or relating to the process of production of ceramic rods for pyrolytic carbon resistors*—Shiv Saran & S. Rangarajan, NPL, New Delhi.

92278 : *N-substituted 1, 2-diphenylethylamine derivatives of pharmacological interest*—P. P. Rao, P. B. Sattur & G.S. Sidhu, RRL, Hyderabad.

92292 : *Improvements in or relating to the manufacture of phosgene (carbonyl chloride)*—R.T. Thampy & S.R. Goel, Shri Ram Institute for Industrial Research, Delhi.

92526 : *Improvements in or relating to pitch mastic compositions*—C.G. Swaminathan, B.C. Mazumdar & B.S. Mongia, CRRI, New Delhi.

Accepted

81279 : *Improvements relating to the process for insect-proofing of gunny bags for storage of foodgrains*—S.K. Majumder, J.K. Krishna Rao & H. C. Sethumadhavan, CFTRI, Mysore.

83365 : *Magnesium copper sulphate non-polarisable batteries*—P.B. Mathur & N.J. Paul, CECRI, Karaikudi.

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R. N. 4212/5

CSIR NEWS

VOL. 14 APRIL 13, 1964 : CHAITRA 24, 1886 No. 7

GOVERNING BODY DECISIONS

The Board and Governing Body of the Council of Scientific and Industrial Research met in New Delhi on March 23 & 24, 1964, respectively. Prime Minister, Shri Jawaharlal Nehru presided.

Among the important proposals or recommendations approved by the Governing Body were: (i) Establishment of a National Institute of Oceanography, and a Documentation Service Centre at Bangalore and three more centres one each at Bombay, Calcutta and Madras; (ii) setting up of a 250-ton pilot plant for the production of magnesium at Jamshedpur; (iii) re-designation of all scientific officers, excepting the directors, as scientists; and (iv) holding of two summer schools, four symposia and two seminars.

Governing Body Meeting : (left to right) Sarvashri G. L. Nanda, M. C. Chagla, Jawaharlal Nehru, Dr S. H. Zaheer and Shri A. K. Mustafy

Oceanographic Institute—One of the important decisions of the Governing Body was to set up a National Institute of Oceanography. The proposed Institute will carry out research on various aspects of physical, biological, geological and chemical oceanography. Its scope of work will include prospecting for petroleum and minerals in sea bed. Units of research are also to be established at suitable coastal centres in both the East and West coasts to deal with specialised problems.

The Institute will develop as the focal point of information relating to Indian Ocean, its resources and the basic factors for applying the knowledge to problems of defence, fisheries, raw materials from the sea, oceanic transportation, sedimentation and erosion problems, prospecting of continental shelf and the deeper waters and safe diposal of natural and radioactive pollutants. The Institute will cooperate with the India Meteorological Department in ocean meteorology.

Documentation Service Centre—A proposal for establishing a Documentation Service Centre at Bangalore by the Indian National Scientific Documentation Centre (Insdoc) with assistance from Unesco was approved. The centre will serve as a regional centre of Insdoc in serving all its clientele in the distant parts of Southern India. It will also provide facilities to the national laboratories and other scientific institutions in the region for printing their scientific journals, bulletins, etc.

Establishment of similar Insdoc centres at Bombay, Calcutta and Madras during the Fourth Plan period has also been agreed to.

Magnesium Pilot Plant—The setting up of a 250-ton pilot plant for production of magnesium at the National Metallurgical Laboratory, Jamshedpur was another important proposal approved by the Governing Body. The project report and design will be drawn up by the Central Design & Engineering Unit of CSIR.

Revision of Scientific Officers' Designation—The Governing Body ratified the recommendation of the twelth conference of directors of

(*Contd on p. 2, col. 3*)

Bhatnagar Awards

Shanti Swarup Bhatnagar Memorial Awards for various disciplines for the years 1960, 1961 and 1962 have been announced :

Physical sciences : Dr M.G.K. Menon, Tata Institute of Fundamental Research, Bombay (1960) ; Prof. G.N. Ramachandran, Madras University, Madras (1961).

Chemical sciences : Dr T. R. Govindachari, CIBA Research Centre, Bombay (1960) : Dr (Mrs) Asima Chatterjee, Calcutta University, Calcutta (1961) ; Dr S.C. Bhattacharyya, National Chemical Laboratory, Poona (1962).

Biological sciences : Prof. T. S. Sadasivan, Madras University, Madras (1960) ; Dr M.S. Swaminathan, Indian Agricultural Research Institute, New Delhi (1961).

Engineering Sciences : Shri H.N. Sethna, Atomic Energy Establishment, Trombay (1960) ; Shri M. M. Suri, Research Designs & Standards Organisation, Ministry of Railways, Lucknow (1962).

Medical sciences : Dr R.B. Arora, All India Institute of Medical Sciences, New Delhi (1961).

B R I E F S

Meeting

A meeting of the Executive Council of the Central Food Technological Research Institute, Mysore will be held at the Institute, on April 25, 1964 at 4.00 p.m.

Bleaching Earths and Active Carbons

A seminar on Bleaching Earths and Active Carbons will be held at the Regional Research Laboratory, Hyderabad during Aug. 11-13, 1964. The seminar will cover: (i) Fundamental and applied studies on bleaching earths and active carbons, (ii) Production and economics of the processes involved, (iii) Utilization aspects, (iv) Standards and specifications, and (v) Geological and mineralogical aspects.

Besides scientists and technologists working in the field, representatives of the industry processing these materials are expected to participate. Further particulars may be obtained from the Director, Regional Research Laboratory, Hyderabad-9.

CMRS, Dhanbad

The facilities created at the Central Mining Research Station, Dhanbad for testing of flame-proof electrical and other mining equipment have given a great impetus to the growth of flame-proof machinery industry and mining equipment industry in India. A number of equipment tested at the Station which were formerly imported are now being manufactured in the country. A survey carried out by the Station has revealed that foreign exchange of a value of over Rs 57 lakhs was saved in 1962 as a result of manufacture of such equipment including cap lamps, helmets, flame-proof motors, flame-proof air break and oil break units, and ohm-meters and other mining equipment.

Low Temperature Carbonization Symposium

The first volume of proceedings of the symposium on Low Temperature Carbonization of Non-caking coals and Lignites and Briquetting of Coal Fines, held at the Regional Research Laboratory, Hyderabad in November 1961, has been published by the Publications and information Directorate of CSIR. This volume (Royal 8 vo, Pp. 451 & price Rs 35.00) contains 36 papers together with discussions under two sections : (i) Briquetting of non-caking coal fines (14 papers) ; and (ii) Low temperature carbonization (L.T.C.) of noncaking coals and lignites (22 papers). The general discussion on L.T.C. is also included in the volume.

CRRI Annual Report

The Annual Report of the Central Road Research Institute, New Delhi for 1962-63 has been published. The report (pp. ix+72) summarises the progress of research work carried out in the following divisions : Soils ; Flexible Pavements ; Rigid Pavements ; Roads ; Traffic Engineering, Economics and Statistics ; Bridges ; and Workshop. Other activities of the Institute like the technical training, technical advice and assistance to industry, participation in conferences and symposia, deputations, etc. are also included. Information on the functions of the Institute, research staff, new apparatus and equipment, publications, visitors, etc. is given under seven appendices.

CSIR takes over Drug Farms and Factories, J & K

The State of Jammu & Kashmir occupies a unique position in the cultivation of herbs and drugs for the pharmaceutical industry in the country. Medicinal plants like Pyrethrum, Belladona, *Mentha arvensis*, etc. grow in the Kashmir forests. They are also grown in the Government farms in Jammu and Kashmir. In order to improve the supply of drugs and herbs in the country, CSIR has taken over the control of the drug farms and factories of Jammu and Kashmir with effect from the last week of January 1964. The farms and factories comprise the following units ; (i) Drug Farm, Jammu, with an area of 3354 acres ; (ii) Drug Factory, Jammu ; (iii) Five drug farms in Srinagar, with a total area of 1092 acres ; and (iv) Drug Factory, Srinagar.

The drugs processed in the factories such as menthol, mentha oil, pyrethrum extract, belladona extract and cedarwood oil are of vital importance in the health programme of the country.

Computing Centre at CBRI

An International Business Machines (I.B.M.) digital computer with a store of 60,000 positions is to be installed at the Central Building Research Institute, Roorkee in May or June 1964. It will be the first machine to be installed at any of the national laboratories. The first course on languages and programming techniques was organized at the Institute during March 2-13, 1964, with a view to train engineers and scientists. Shri R.K. Bansal of the I.B.M. delivered the lectures. About 40 nominees from the Roorkee University, the Irrigation Research Institute and the Central Building Research Institute participated in the course.

GOVERNING BODY DECISIONS

(*Contd from p. 1, col. 2*)

national laboratories that all scientific officers excepting the directors should be designated 'Scientists' irrespective of the different salary scales.

Summer Schools, Symposia & Seminars—It was decided to hold two summer schools, one on 'Elementary particles and high energy physics' at the Institute of Mathematical Sciences, Madras and the other on 'Chemistry and technology of fats and oils' at the Regional Research Laboratory, Hyderabad.

Holding of the following symposia has also been approved: (i) Drugs acting on the central nervous system, (ii) Fatty acids (both at the Regional Research Laboratory, Hyderabad, (iii) Solid state physics (National Physical Laboratory, New Delhi); and (iv) Glycosides and saponins (under the joint auspices of CSIR and the Immunity Scientific Association of the Bengal Immunity Research Institute, Calcutta).

Approval has also been accorded to the holding of a seminar on 'Clay puzzolanas' by the Central Road Research Institute, New Delhi during the International Geological Congress in November 1964 and the 'Fifth seminar on electrochemistry' by the Central Electrochemical Research Institute, Karaikudi.

CFRI Coal Gasification Plant inaugurated

A high pressure coal gasification pilot plant was inaugurated by Shri M.C. Chagla, Union Minister of Education and Vice-President, CSIR, at the Central Fuel Research Institute, Jealgora on March 15, 1964. Shri C. Subramaniam, Union Minister of Steel, Mines and Heavy Engineering and Chairman of the Executive Council of the Institute presided over the function.

The Rs 35-lakh pilot plant, which has been obtained from West Germany out of funds provided by the U.S. Government under the T.C.M. aid programme, was formally handed over to Shri Chagla before the inauguration by Mr Jhon McComb, Chief Industrial Adviser, United States Agency for International Development.

In his inaugural address, Shri Chagla referred to the necessity of creating a proper scientific outlook and an atmosphere for scientific research in the country, and stressed that the scientists must be given a fair deal. He referred to the important role that the Institute was playing in the planning and implementation of the Five-Year Plans of the nation for industrial advancement. He particularly stressed the help given by the Institute to the steel industry in regard to the problems of supply of coking and blendable coals and the manufacture of metallurgical grade coke from sub-standard coking coals by beneficiation, blending, and carbonization. He also thanked the U.S. Government for the aid. While formally inaugurating the plant, he hoped that the research would be of direct value to the establishment of a well-organised gas industry in India.

Shri Subramaniam, in his presidential address, stressed the need for assessment and proper utilization of our mineral resources and pointed out the importance of scientific research and technological developments. He referred to the work done by the Institute on the rational utilization of large deposits of low-grade coals. The pilot plant on pressure gasification of coal which was being inaugurated by Shri Chagla was 'another step forward in the process of utilization of low-grade coal resources for the advantage of the community at large and for the progress of the country as a whole'. He also referred to the important work done by the Institute in the field of production of suitable domestic coke from coal with the low temperature carbonization plant which was installed three years ago.

Dr A. Lahiri, Director of the Institute, while welcoming the guests, briefly reviewed some of the important activities of the Institute and said that attempts were now being made to evolve a process which was likely to produce metallurgical fuel for the blast furnaces using 60-70 per cent of coking coal fines.

Shri S.K. Das Gupta, Assistant Director-in-charge of the Coal Gasification Division, proposed the vote of thanks.

A folder on *Pressure Gasification* was brought out on the occasion.

CFRI, Jealgora—At the Inauguration Ceremony of Coal Gasification Plant : (left to right) Sarvashri C. Subramaniam, M.C. Chagla and Dr A. Lahiri

STAFF NEWS

Appointments

SHRI S.K. PARTI—Mechanical Engineer, CEERI, Pilani (Nov. 13, 1963).

SHRI N. RAMAMURTHY—Pool Officer, CEERI, Pilani (Jan. 2, 1964).

SHRI W.S. KHOKLE—Senior Scientific Officer : Grade I, CEERI, Pilani (Jan. 22, 1964).

SHRI G. MASCARENHAS—Stores Officer, NAL, Bangalore (March 11, 1964).

SARVASHRI T.K. DATTA & M.C. DIAS—Pool Officers, NML, Jamshedpur (Feb. 7 & 12, 1964 respectively).

Promotions

SHRI V.K. BATRA, Senior Scientific Assistant—Junior Scientific Officer, NPL, New Delhi (Aug. 26, 1963).

SHRI G.S. SIDHU, Junior Scientific Officer—Senior Scientific Officer; Grade II, CEERI, Pilani (Jan. 1, 1964).

SARVASHRI J.P. RAINA & S.K. GOYAL, Senior Scientific Assistants—Junior Scientific Officers, CEERI, Pilani (Jan. 1 & 6, 1964 respectively).

SHRI S.P. KOSTA, Senior Scientific Assistant, NPL, New Delhi—Senior Scientific Officer : Grade II, CEERI, Pilani (March 9, 1964).

SHRI P.K. RANGOLE, Senior Scientific Assistant, NPL, New Delhi—Junior Scientific Officer, CEERI, Pilani (March 9, 1964).

SHRI R.K. SETHI, Civil Overseer—Civil Engineer, CEERI, Pilani (Feb. 11, 1964).

SHRI SAMIR SEN, Senior Scientific Assistant—Information & Liaison Officer, CFRI, Jealgora (Feb. 22, 1964).

(*Contd on p. 6, col. 2*)

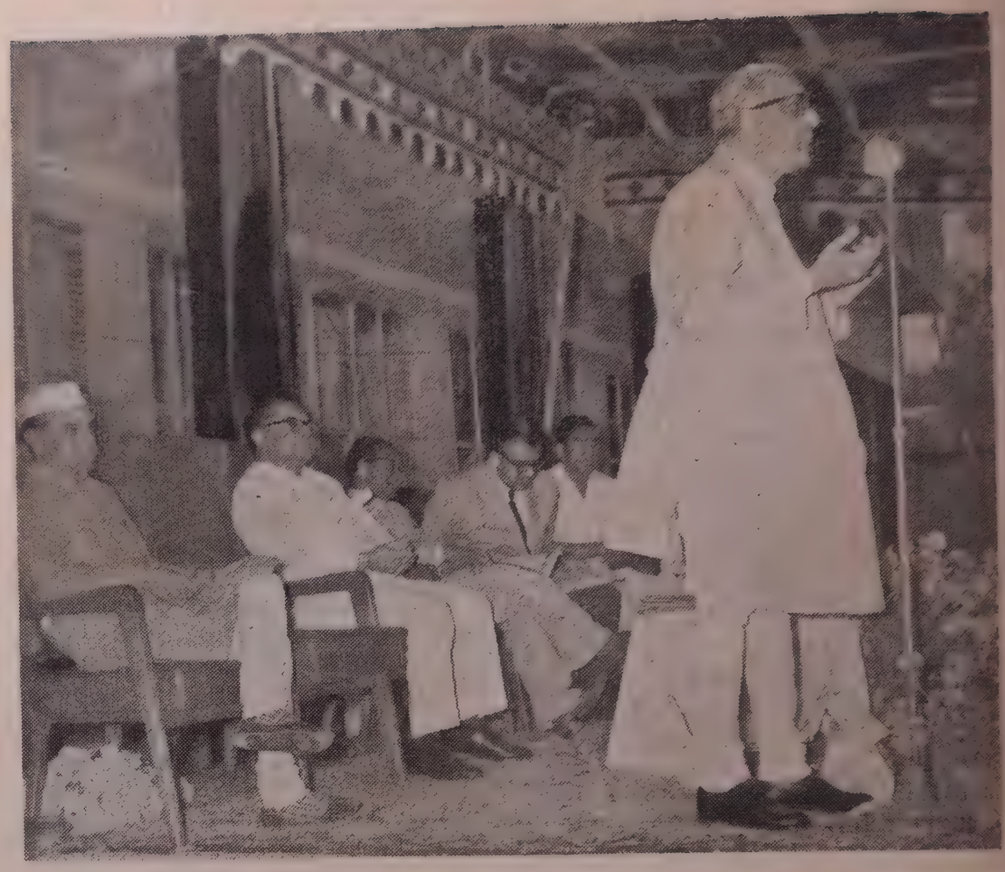
Welcome to New V.P. & Farewell to the Out-going V.P.

The officers and staff of CSIR and CSIR Staff Association and Club held a joint function in the lawns of the CSIR Secretariat, New Delhi on March 23, 1964 to bid farewell to Prof. Humayun Kabir, the out-going Vice-President of CSIR, and to welcome Shri M. C. Chagla, the new Vice-President. The function was presided over by Dr. S. Husain Zaheer, Director-General, Scientific & Industrial Research.

Speaking on the occasion, Shri Chagla pointed out that it was only dedicated work by scientists that could make any scientific institution successful. He emphasised that in scientific probes all were equal and that he would try to remove the various distinctions among scientists.

Prof. Kabir during his reply remarked that the sense of fellowship that existed among CSIR employees was one of the main reasons for the valuable service of the Council during the past 20 years. It was the pooling of resources by scientists at all levels that had made the Council a force to reckon with. Prof. Kabir was confident that under the leadership of Chagla, science would progress in India along with democracy.

Shri A.M. Zutshi Gulzar, President of the CSIR Staff Association, thanked Shri Chagla and Prof. Kabir for having accepted the invitation.



CSIR Secretariat, New Delhi—Shri M.C. Chagla speaking on the occasion of Farewell to Prof. H. Kabir

Visitors

Dr Harold Wooster, Director, Information Sciences Directorate, Air Force Office of Scientific Research, U.S.A., visited the National Aeronautical Laboratory, Bangalore on Feb. 26, 1964.

Mr H. Aizawa, Chief of Training, Overseas Technical Cooperation Agency, Tokyo, visited the Central Glass & Ceramic Research Institute, Calcutta on Feb. 27, 1964.

Dr R.M. Dolby, Unesco Technical Adviser, Central Scientific Instruments Organization, Chandigarh visited the Central Electrochemical Research Institute, Karaikudi during March 3-13, 1964 and delivered a series of lectures on 'Electron microscopy', 'X-ray microanalysis', 'Magnetic tape-recording' and 'Some philosophical considerations in electronic design'.

Mr K. Fabris, Vice-Minister of Mines and Power, Poland, accompanied by diplomatic officials of the Polish Embassy and Polish mining experts, visited the Central Fuel Research Institute, Jealgora on March 18, 1964.

Dr P.N. Mukherjee

Dr P.N. Mukherjee, Senior Scientific Officer : Grade I, Central Fuel Research Institute, Jealgora, has been appointed on promotion Assistant Director, in charge of the division of Physical Chemistry, with effect from March 18, 1964. Shri Mukherjee (*b.* Aug. 26, 1924) had a uniformly brilliant career right from school, having stood fourth in order of merit in the Matriculation examination. He obtained the M.Sc. degree in Applied Chemistry from the Calcutta University in 1946 securing first class. He joined the Indian Institute of Science, Bangalore in 1947 as a research worker and worked under the guidance of late Dr J.C. Ghosh till February 1949. The same year he joined the Central Fuel Research Institute as Junior Scientific Assistant and was promoted as Senior Scientific Assistant in 1950. In 1952 he was selected to participate in the Foreign Students Summer Project at the Massachusetts Institute of Technology, U.S.A., where he was associated with Prof. H.C. Hottel in the Department of Chemical Engineering on the study of surface chemistry and gasification of coal. In 1954 he was promoted as Junior Scientific Officer and as Senior Scientific Officer : Grade II in 1957 and to the senior grade in 1959. He was awarded the D. Phil. degree of the Calcutta University in 1962 for his work on Surface reactions on coal.

Dr Mukherjee's main field of investigations has been the physico-chemical properties of coal and its oxidation products. He has developed and patented a process of making a new class of nitrogenous fertilizers from low rank coals and their oxidation products. He is also the author of a patent on production of anion-exchange resins from coal tars. He has to his credit twenty-eight research papers in Indian as well as foreign journals. His paper, *Studies of humic acids from coal*, was awarded the Cooper Memorial Medal for 1956 by the Institution of Chemists (India).

RESEARCH PROGRESS

CEERI, PILANI

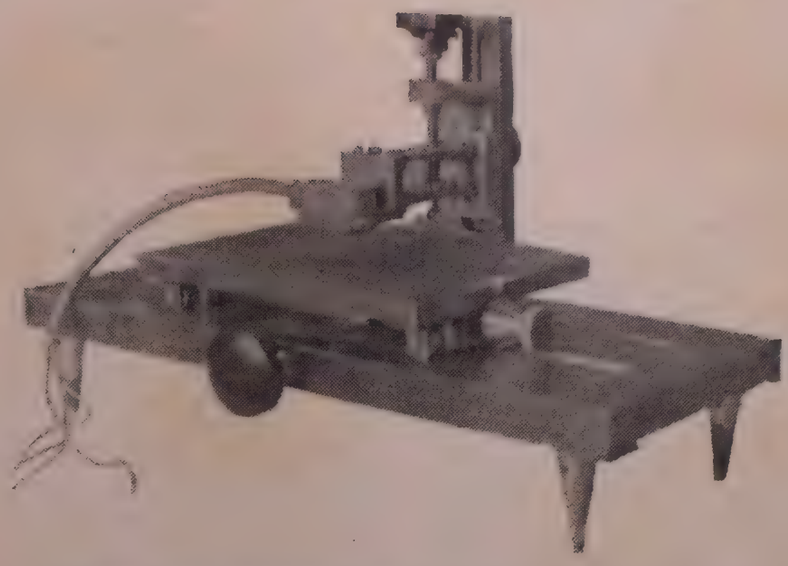
Four-point Probe Resistivity Measuring Unit—An important property of a semi-conductor material (germanium, silicon and III—V compounds of the periodic table) is its resistivity. A quick and accurate method of measuring the resistivity becomes essential in any semi-conductor materials laboratory. A four-probe measuring unit is a simple device for rapid measurements of resistivity. The four probes press against the material and a current is made to flow through the outer two probes. By measuring the potential difference across the two inner probes the resistivity can be calculated.

A prototype unit has been designed and fabricated. A special feature of the instrument is that the probes are individually spring-mounted and hence are able to make firm contacts with the semi-conductor surface regardless of the unevenness of the sample. The unit has a base plate with a precise moving mechanism so that it can be used to measure resistivity variations along any direction of an ingot or a slice. The unit can measure resistivity in the range of 10^{-3}-10^{4} ohm-cm. with an accuracy of ± 5 per cent.

These units are being batch-produced at the request of some research laboratories and universities.

Four-Port Microwave Circulator—A four-port waveguide circulator suitable for operation at X-band has been designed and fabricated using General Ceramics R-4 Ferrite. The circulator employs a right-angled H-type junction of two X-band waveguides. The biasing magnetic field used for operation is less than 300 gauss. The VSWR is of the order of 1.05 without any tuning. The isolation is greater than 20 db. over a 400 Mc band width and rises to a value greater than 35 db. at the centre frequency. The insertion loss is less than 0.5 db.

The circulator can be used in low-noise parametric amplifiers, masers and in radars. This circulator will be used to develop a solid-state duplexer for X-band radar.



CEERI, Pilani—Four-Point Probe Resistivity Measuring Unit

NAL, BANGALORE

Computation of Supersonic Nozzle Contours—A programme for computing supersonic nozzle contours has been written in the Elliot 803 autocode. The contour for Mach number 2.5 has been computed for the 1-ft trisonic wind tunnel. This is being used in the pilot 2-in. blowdown tunnel and the work is being extended to incorporate the boundary-layer corrections. This forms one of the standardized programmes to be included in the programme library being set up at the Laboratory for solution of standard problems.

The method used for the contour computation gives continuous curvatures which are necessary for flexible plate type nozzles inasmuch as the aerodynamic contour must be such that it can be closely simulated by the elastic curve of the flexible plate. In essence, the procedure involves computation of two definite integrals in which a variable occurs in the integrand as well as in the limits. This necessitates the computation of the integral *ab initio* for each point and as such the amount of work is too much to be done on desk computers.

At present there are no simple approximate formulae for functions which are of importance in aeronautical calculations. Work on evolving simple formulae for computing e^{γ} has been completed and formulae for a number of other functions are being derived. These formulae reduce the number of operations and the number of memory locations necessary in these computations.

Sponsored Research

Progress in Chemical Research

During the year 1963-64, 209 research projects under the Chemical Research Committee were in operation and thirty-four projects were terminated.

The following are the important research results :

Dyes : A new series of thiocyanine dyes has been prepared at the Dyestuff Technology Section of the University of Bombay. A process for the manufacture of Alcian type of dyes has been developed.

Plant Chemistry : The structures of the alkaloid rhazine from *Rhazya stricta* and of bikhatisine, a diterpene alkaloid from Indian *Aconites*, have been established. The alkaloid nudiflorine from *Treura nudiflora* has been shown to be a structural isomer of ricinidine.

Synthesis of *dl*-nimbiol methyl ether has been achieved and a new source of usnic acid has been found in *Usnea pectinata* Tayl which can be exploited for antibiotic preparations (tuberculocidal).

Biochemistry : The impact of recent trend towards interpreting cell function at the molecular level is clearly felt in investigations on protein biosynthesis and nucleic acid metabolism. Studies on the disturbances on brain metabolism and mechanism of action of an antibiotic like mycobacillin are notable examples.

In the field of lipids, studies on the biosynthesis and metabolism of cholesterol and to a certain extent on the other lipid constituents like lipoproteins, triglycerides, fatty acids, etc. have formed the main lines of approach in fundamental investigations as well as those directed towards an understanding of fatty livers, protein deficiency and atherosclerosis. Among vitamins, vitamin A group has been studied extensively. The antibiotics studied include mycobacillin, Nystatin, Amphotericin b, Neomycin and streptomycin. Studies on carbohydrate metabolism include among various other sugar derivatives, glucose cycloacetoacetate and mucopolysaccharides. In plant biochemistry, study of amino acid metabolism and enzyme make-up in a sub-cellular fraction like mitochondria as well as in normal and abnormal plant cells and isolation of new compounds of toxicological interest from seed pulse have been the main areas of investigation.

Studies on the preservation of jute by the use of mixed antiseptics, development of cheap and indigenous proofing materials to impart rot and weather resistance and resistance to microbial action, preservation of fruits by treatment with hormone like 2, 4 D and wax coating may all be mentioned as significant contributions in the field of applied biochemistry.

Physical Chemistry : Interesting results have been obtained on the adsorption of ions at micro-concentration from solution as determined by tracer technique and adsorption at liquid interface, correlation between true zeta potential and rate of coagulation, interaction between gels and organic compounds, a.c. polarographic studies at the dropping mercury electrode, effect of ultrasonic waves on colloidal systems, the free energy of micelle formation and flotation of metal oxides by surfactants.

Polymer Chemistry: New redox initiators involving metal ions have been studied. Initiators generating halogen end groups have been studied with the dye techniques for characterization of end groups; two polymeric complex acids have been isolated from Indian plant gums.

Inorganic Chemistry : New methods for the estimation and isolation of some of the rare earth elements and for determining the number of species, composition and stability constants of complexes giving anodic polarography such as $Hg(SCN)_2$, Fe^{2+} (& Fe^{3+}) orthophenylenediamine, Fe^{2+} (& Fe^{3+})—2-thiobarbituric acid, have been developed. A series of new complexes such as of thiomalic acid with transitional elements like Ni, Co, Cu, Fe, Mo, etc., SO_3 with CH_3OH, ethers, have been prepared and their properties studied. The kinetics of substitution of cobalt thisulphate complexes by a variety of nucleophilic reagents such as NH_3, OH^-, H_2O Cl^-, have been studied.

Industrial Chemistry : The main contributions are : preparation of products from dimerized fatty acids, utilization of Indian terpentine oil, development of fused and bonded vanadia catalysts, preparation of butyl alcohol from ethyl alcohol, oxidation of acetaldehyde to acetic acid, preparation of starch derivatives, application of acyl and alkyl phenols as water-proofing agents, cross-linking of cellulose and cross-bonded viscose fibres.

STAFF NEWS

(*Contd from p. 3, col. 3*)

SHRI S. GOPAL—Senior Scientific Officer : Grade II, CECRI (Feb. 12, 1964).

SHRI A.M. ZUTSHI, Assistant—Stores Verification Officer, CSIR Secretariat, New Delhi (March 13, 1964).

* * *

SHRI K.D. MAJI, Senior Scientific Officer : Grade II, NML, Jamshedpur, resumed duties on Jan. 4, 1964 after completing his 12 months' training in U.K. (under the Colombo Plan) in the field of Application of radioactive isotopes in metallurgy and metal physics.

SHRI DINESH MOHAN, Deputy Director-in-charge, CBRI, Roorkee, has been nominated a member of the permanent Committee of the International Union of Testing & Research Laboratories for Materials and Structures.

DR R.K.N. IYENGAR, Deputy Director, CRRI, New Delhi, has been nominated a member of the Working Group for Roads, set up by the Ministry of Transport & Communication for the formulation of proposals for transport for the Fourth Five-Year Plan and a long-term plan for the period ending 1975-76.

SARVASHRI V.K. RAMA SUBRAMANIYAM, A.K. SANTRA & S.B. CHAUDHURY, Senior Scientific Assistants and SHRI D.K. BANERJEE, Junior Scientific Assistant, CFRI, Jealgora, have been elected Associates of the Institution of Chemists, (India).

Obituary

We regret to announce the death of Shri R. Seshadrinathan, Translating & Abstracting Officer, Insdoc, due to an accidental fall on March 4, 1964. Shri Seshadrinathan joined Insdoc in October 1958 after an excellent academic record. He secured first class in M.A. (Pure and Applied Mathematics) and also first class in M.Sc. (Modern Algebra). A self-taught linguist, Shri Seshadrinathan acquired excellent proficiency in French, German, Russian, Spanish and Italian. He stood first in the Hindi examination (Praveen) conducted by the Home Ministry on all India basis and was the only candidate to secure the prize of Rs 300 in 1962. He took an active part in the organisation of the Seminar on Scientific Translations held at Insdoc in 1962 and contributed papers on scientific translation. His interest in scientific translation was so great that he built up an excellent personal collection of publications on this subject. He took active part in the work of the Indian Scientific Translators Association. In view of his excellent background in Pure and Applied Mathematics and a wide range of foreign languages, Insdoc had planned to develop a cell for mechanical translation, under his supervision. His passing away is an irreparable loss to Insdoc.

The excellent collection of books on scientific translation left by him has been donated by his family to Insdoc.

Printed and published by Shri S.A. Chari, Publications & Information Directorate, CSIR, Delhi-12, at Asia Press, Delhi-6

R. N. 4212/5

CSIR NEWS

VOL. 14 APRIL 27, 1964 : VAISAKH 7, 1886 No. 8

MEETINGS, SUMMER SCHOOL & SYMPOSIUM

The first meeting of the Executive Council of the Publications & Information Directorate, New Delhi will be held at the CSIR Secretariat, New Delhi on May 2, 1964 at 10.00 a.m.

The first meeting of the Executive Council of Insdoc, New Delhi, will be held at the Publications & Information Directorate and Insdoc buildings on May 7, 1964 at 11 a.m.

Summer School in Oils and Fats

A summer school on Recent Advances in the Chemistry and Technology of Oils and Fats will be held at the Regional Research Laboratory, Hyderabad, during June 15-27, 1964. About 20 distinguished Indian scientists will deliver lecturers in their special fields. Demonstrations of various modern analytical methods, and laboratory and pilot plant operations will also be arranged. About 30 trainees—research workers, plant technicians or teachers—will be selected from nominations received from different organisations. Further particulars may be obtained from the convener Dr G. Lakshminarayana of the Laboratory.

Water Treatment Problems

A symposium on Problems in Water Treatment will be organised by the Central Public Health Engineering Research Institute (CPHERI), Nagpur during November 1964. Intending participants may send two copies of full papers so as to reach Dr N. U. Rao, CPHERI, Nehru Marg, Nagpur-3, by July 31, 1964. Exact dates will be announced later.

STAFF NEWS

Appointments

DR D.R. SHRIDHAR—Senior Scientific Officer : Grade II, CDRI, Lucknow (March 17, 1964).

SARVASHRI R. CHATTOPADHYAY & S.R. JOTI—Pool Officers, NML, Jamshedpur (March 17 & April 7, 1964 respectively).

Promotions

SHRI P.S. NAGPAUL, Senior Scientific Officer : Grade II, CPHERI, Nagpur—Senior Scientific Officer : Grade I, CEERI, Pilani (March 26, 1964).

DR R.P. RASTOGI, Senior Scientific Officer : Grade II—Senior Scientific Officer : Grade I, CDRI, Lucknow (March 12, 1964).

SARVASHRI T.V. PRASAD & R. CHOUBEY, Senior Scientific Officers : Grade II—Senior Scientific Officers : Grade I, NML, Jamshedpur (April 14, 1964).

SARVASHRI T.N. GHOSH & C.V. SUBRAMANYAM—Junior Scientific Officers, NPL, New Delhi (April 3, 1964).

SHRI R.V. KULKARNI, Senior Scientific Officer : Grade II—Senior Scientific Officer : Grade I, NCL, Poona (March 16, 1964).

Transfers

DR R.K. SRIVASTAVA, Information & Liaison Officer, CFRI, Jealgora—Senior Scientific Officer : Grade II, IIP, Dehra Dun.

SHRI J. SANT RAM, Administrative Officer, CDRI, Lucknow—CECRI, Karaikudi (Feb. 5, 1964).

DR T.H. SHAMA RAU, Senior Scientific Officer, CDRI, Lucknow—VITM, Bangalore.

Resignation

SHRI C.R. GUPTA, Officer on Special Duty, CRRI, New Delhi (April 14, 1964).

(*Contd on p. 5 col. 1*)

Kalinga Prize for Shri Jagjit Singh

Shri Jagjit Singh, Director of Traffic-Transport, Union Ministry of Railways, has been awarded the Kalinga Prize for 1963 for popularization of science. He is the first Asian to have received the Prize.

A student of mathematics with specialization in operational research, Shri Jagjit Singh took to science popularization in 1950 with a series of articles in the 'National Herald' of Lucknow. In 1959, he wrote the widely acclaimed book, 'Mathematical Ideas, their Nature and Daily Use'. This was followed in 1961 by 'Great Ideas and Theories of Modern Cosmology'. In 1962, he participated in the composite work of Dover Publications' 'Intellectual and Cultural History of the Western World' in two volumes. His contributions 'Mathematics Today' and 'Relativity and Cosmological Revolution' have been published in the 'Illustrated Weekly of India', Bombay. He has also been contributing articles to 'Science Reporter'.

Shri Jagjit Singh is connected with the activities of CSIR as member of the Executive Council of the Publications & Information Directorate and Advisory Committee of Hindi Unit, and chairman of the Advisory Committee of 'Science Reporter'.

At a reception arranged at the Publications & Information Directorate, New Delhi on April 22, 1964, Shri A. Rahman, Chief Editor, felicitated Shri Jagjit Singh on behalf of the staff of the Directorate for the recognition conferred on him.

B R I E F S

Solid State Physics

The Symposium, Lectures and Training Course on Solid State Physics *(CSIR News*, Vol. 14, No. 3, p. 1) was inaugurated at the National Physical Laboratory, New Delhi by Shri M. C. Chagla, Union Minister of Education, on April 8, 1964.

Dr P. K. Kichlu, Director of the Laboratory, welcomed the minister, guests and participants.

Stressing the importance of science and scientists in the development of the country, Shri Chagla said that it was only through a scientific outlook that the economic problems of the country could be solved. Expressing the view that there was no dearth of capable scientists in India, he appreciated the sense of dedication among Indian scientists abroad as well as in the country and pleaded for a proper atmosphere for carrying out research. Although applied science had an immediate importance in the context of the economic problems facing the country, there could be no applied science without pure science. The response to this symposium had been extremely encouraging since the cultivation of scientific temper was intimately connected with the study of fundamental science. He pointed out that out of 60,000 solid state physicsts in the world, England alone had 6,000 of them at the Ph.D. level. The high proportion of scientists working in the field testified to the importance of the subject.

The Symposium, Lectures and Training Course, which lasted till April 18, 1964 were attended by about 250 scientists from all over the country.

Prof. D. S. Kothari, Chairman, University Grants Commission, delivered the first lecture, 'Some Basic Concepts in Physics'.

Metallurgical Wastes

The symposium on Utilization of Metallurgical Wastes (*CSIR News*, Vol. 13, No. 17, p.l) held at the National Metallurgical Laboratory, Jamshedpur during March 10-13 1964 was inaugurated by Prof. Humayun Kabir, Union Minister for Petroleum and Chemicals and presided over by Shri Jehangir Ghandy, Director, Tata Iron and Steel Co. Ltd and Chairman of the Executive Council of the Laboratory.

Prof. Kabir in his inaugural address said that with the growing importance of primary ferrous and non-ferrous metallurgical industries in the successive Plans, it had become essential to focus the attention on the optimum utilization of various metallurgical wastes, In this context he said that the symposium was being organised at the most opportune moment.

In the course of his presidential speech, Shri Jehangir Ghandy pointed out that the control of industrial wastes was a problem of great significance, a proper solution of which involved economic, technical and legal factors. In a reference to the Laboratory's contributions in this field, he cited the examples of utilization of mine discards such as iron ore fines through agglomeration techniques and recovery of zinc dross.

Dr B. R. Nijhawan, Director of the Laboratory, while welcoming the delegates, observed that such international symposia stimulated thought and practical initiation through interchange of technical know-how relating to important technical development.

The symposium in which 37 technical papers on research and development work on the subject were presented and discussed in six technical sessions, was attended, by a large number of delegates including those from U.K., West Germany, France, Norway, U. S. S. R., U. S. A. and Japan.

The Flora of Delhi

This is the title of a reference manual compiled by Dr J. K. Maheshwari and published by the Publications and Information Directorate of CSIR. This publication (Royal 8 vo, pp. 447, price Rs 28.00) incorporates the results of a survey carried out by the author (under a grant from CSIR) of the flowering plants of Delhi and its environs. Nine hundred and forty-two species of indigenous, naturalized and cultivated plants under 549 genera belonging to 120 families have been described in the monograph.

CEERI News Letter

The Central Electronics Engineering Research Institute, Pilani is bringing out a quarterly News Letter (cyclostyled) since December 1963.

The inaugural number, which carries a message from the Director-General, Scientific & Industrial Research, sets out the purpose of the periodical, the objectives and activities of the Institute and embodies salient research contributions of the Institute on radio-frequency signal generator, printed circuits and transistorized radio receivers. Also included in the issue are important lectures delivered at the Institute during the preceding months, forthcoming events and a list of latest publications, all of which are regular features of the News Letter.

CRRI, New Delhi

The Technical Information Section of the Central Road Research Institute, New Delhi has been upgraded to a regular division and named 'Technical Information and Operational Research Division'.

Discussion on Fuel Cells

A group discussion on Fuel Cells was held at the Central Electrochemical Research Institute, Karaikudi on March 24 and 25, 1964. Prof. J.O'M. Bockris of the John Harrison Laboratory of Chemistry, University of Pennsylvania, U.S.A. delivered lectures on Electrocatalysis, Various types of fuel cells, Electrode kinetics associated with fuel cells and Possible uses of fuel cells. Two French experts working at the Indian Institute of Petroleum and several electrochemists from different organizations in the country also participated.

Transfer of Schemes

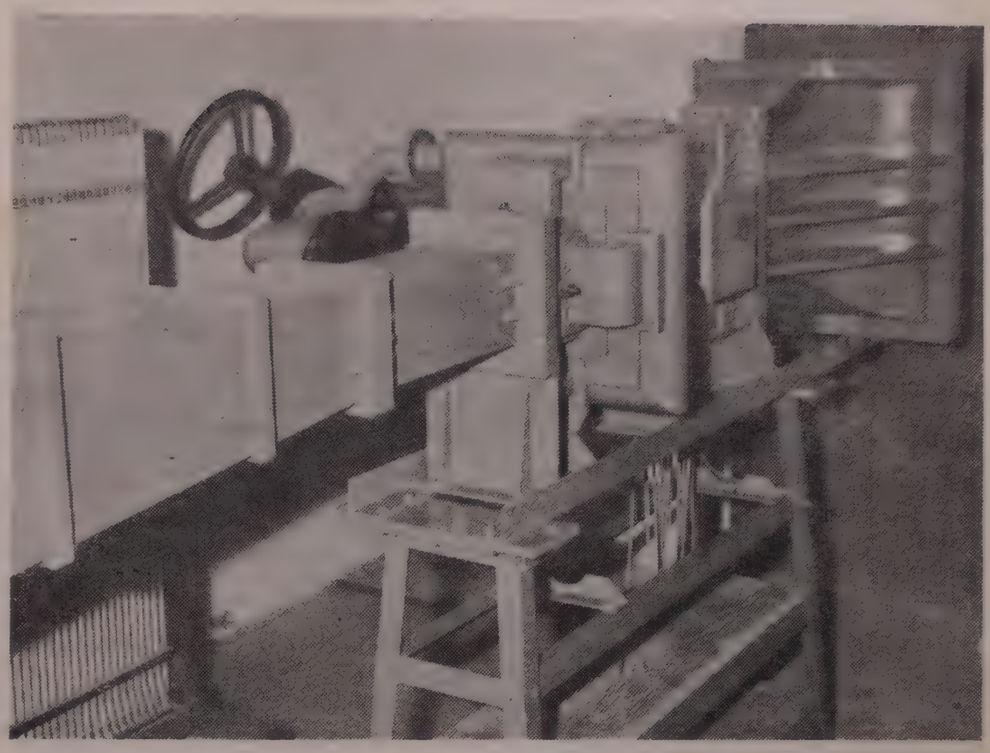
Consequent on the deputation of Dr A. Sreenivasan, Deputy Director, CFTRI, Mysore, to the Atomic Energy Establishment (DAE), Trombay, the DAE scheme and William Waterman scheme have been transferred from the Institute to the Atomic Energy Establishment, Division of Biochemistry and Food Technology, Bombay. Further, Dr D.S. Pradhan and Shri M.S. Netravali have been transferred to DAE, Bombay and Dr A.D. Deodhar has been transferred to the William Waterman scheme.

RESEARCH PROGRESS

NAL, BANGALORE

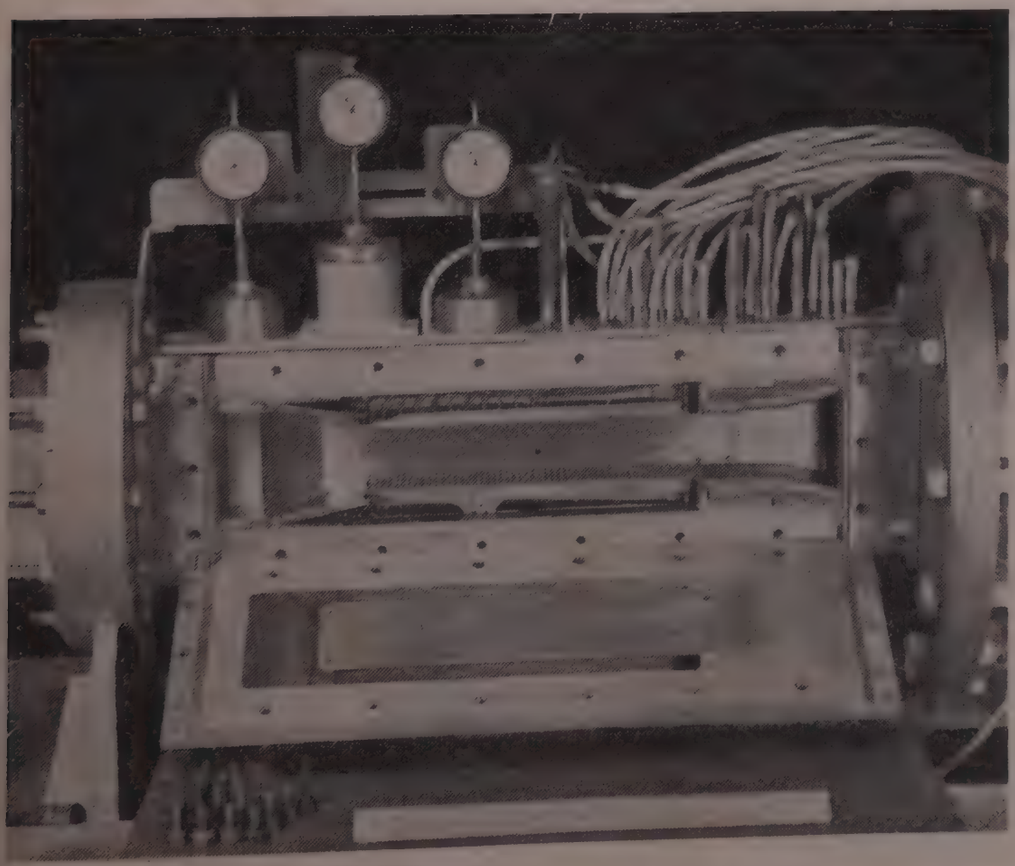
Induction Tunnel—A 5 in. × 5 in. induction tunnel for research in the transonic range ($0.6 \leq M \leq 1.4$) has been designed and fabricated. Following complete installation, the tunnel is being used to test concepts developed as a result of transonic aerodynamic studies at the Laboratory.

The principle consists in injecting high velocity jets into the tunnel, between the test section and the diffuser, inducing the desired airflow in the test section. Special features include improved efficiency of the tunnel due to the modified diffuser between the test section and the injector. The test section plates are 23 cm. apart at the entry and 25 cm. at the exit, providing a 2° divergence of each wall. A calibration of the injector has shown that the maximum slot opening is the optimum for sonic speeds.



NAL, Bangalore—Transonic Induction Tunnel

The calibration of the test section has been completed. It is found that an average Mach number of 1.08-1.10 is achieved at blowing pressures of 55-60 p.s.i.g. with maximum injector slot opening. Glancing interaction and transonic attachment at leading edges of aero-foils, etc. are being investigated.



NAL, Bangalore—Perforated Wall Transonic Test Section of the 2-in. Tunnel

Transonic Test Section—Transonic flow problems constitute one of the critical aspects in aerodynamic research. Due to the mixed type flow resulting from subsonic-supersonic transitions, theoretical approach becomes particularly difficult and therefore experimental research in the transonic regime assumes significance in the context of high-speed aeronautical developments. The peculiar characteristics of transonic flow render it impossible to test models in ordinary solid-wall test sections and hence the first step in developing a transonic test section for the trisonic wind tunnel is the design of suitably perforated-wall nozzles.

Experiments were conducted in the 2-in. blowdown facility with three types of configurations: (i) a two-dimensional arrangement with normal-hole perforated walls for top and bottom and solid side walls (ii) a similar arrangement but with 60° inclined-hole perforated walls substituted for top and bottom, and (iii) a four-wall configuration with inclined holes along top and bottom and normal holes on the sides. The main objectives were, firstly, to explore the maximum Mach number attainable with uniform

flow, as influenced by the relatively large area expansion provided downstream of the test section and, secondly, to determine the flow characteristics of a three-dimensional perforated wall arrangement where inclined holes are used along top and bottom due to their superior wave attenuating properties, normal holes being provided on the sides to facilitate flow visualisation by Schlieren technique.

Satisfactorily uniform flow up to nearly Mach number 1.4 was achieved in the four-wall test section. Due to the sufficient pressure ratio for transonic work always available in a blowdown tunnel, and with the use of a novel 'split-strut' model incidence system proposed (which will still allow the supersonic flow to develop almost as freely downstream of the test section in the expanded area), it is expected that when testing a model, a maximum Mach number close to that attained in the empty test section will be achieved.

CFRI, JEALGORA

Cyclohexylation of Phenanthrene—A new method for the preparation of cyclohexylphenanthrenes by alkylation of phenanthrene and polynuclear armomatic compounds by Friedel Craft's reaction has been developed. 9-Cyclohexylphenanthrene, for instance, has been prepared by heating under reflux a mixture of phenanthrene and cyclohexyl chloride in molecular proportions in the presence of anhydrous stannic chloride at 110-120°C. for 6 hr with continuous stirring—S. S. CHAUDHURY & A.C. BHATTACHARYYA.

Dr L.D. Kapoor

Dr Lachman Das Kapoor has been appointed on promotion Assistant Director, Regional Research Laboratory, Jammu with effect from March 9, 1964.

Born on Sept. 27. 1916 in Muzaffarabad (now in Pakistan) Shri Kapoor took his B.Sc. from the Punjab University and M.Sc. (Ag. Bot.) from the Banaras Hindu University in 1937 and 1940 respectively. He was selected by the Jammu & Kashmir Government for training at the School of Tropical Medicine, Calcutta and on return joined the Drug Research Laboratory, Jammu. He worked in the Forest Department for two years and returned to the Laboratory in 1944 as in-charge of the Botany Section.

Shri Kapoor undertook a survey of economic vegetable products of Jammu & Kashmir and initiated and supervised experimental drug cultivation which was later developed on commercial scale. He was responsible for introducing in the Laboratory a number of exotic medicinal and aromatic plants.

In 1955, Shri Kapoor was sent on deputation to the London School of Pharmacy where he worked under Prof. J.W. Fairbairn, Department of Pharmacognosy and obtained the Ph. D. degree of the London University. Dr Kapoor participated in the British Pharmaceutical Conference at Dublin and the Symposium on the Cultivation of Medicinal Plants at Wageningin (Netherlands). He made extensive tours of U.K. and Europe and saw the plantations where medicinal and aromatic plants were being cultivated.

Dr Kapoor is a Fellow of the Linnean Society of London, member of American Society of Pharmacognosy and of the Institute of Biology (London) and Fellow of the Indian Academy of Sciences. Dr Kapoor was a member of the Indian Pharmacopoeia Sub-Committee under the Ministry of Health.

Dr Kapoor is co-author of the book 'Chopra's Indigenous Drugs of India', and has published about one hundred research papers in Indian and foreign journals. He is Chief Editor of *Bulletin of the Regional Research Laboratory, Jammu.*

Dr M.M. Dhar

Dr Manojit Mohan Dhar, Senior Scientific Officer : Grade I, Central Drug Research Institute, Lucknow, has been appointed on promotion Assistant Director (Medicinal Chemistry Division) with effect from March 9, 1964.

Born on Jan. 13, 1927 at Calcutta, Shri Dhar was educated at the Doon School, Patna Science College (B.Sc. Hons., 1946), Fitzwilliam House, Cambridge (Natural Science Tripos part II, 1948) and the Manchester University (Ph. D., 1952). His studies at Manchester were aided by an assistantship from the British Empire Cancer Campaign and during 1960-61, he was a Rockefeller Foundatoin Fellow at the Harvard University Chemistry Department.

Dr Dhar joined the Institute in 1953 as Junior Scientific Officer. He was promoted as Senior Scientific Officer : Grade II in 1956 and to the senior grade in 1960.

Dr Dhar's investigations have been concerned with the chemistry of plant products and antibiotics, synthesis of polynucleotides and peptides and studies on virus nucleic acids and virus chemotherapy. He is the author of about 40 publications.

Dr Nilakantan passes away

We regret to announce the sad demise of Dr P. Nilakantan, Director, National Aeronautical Laboratory, Bangalore at Coimbatore after a short illness on April 18, 1964.

A condolence meeting was held at the CSIR Secretariat, New Delhi on April 21, 1964 to mourn the death of Dr Nilakantan. Dr S. Husain Zaheer, Director-General, Scientific and Industrial Research, presided. Shri A.K. Mustafy, Secretary, CSIR, read the following resolution, to be conveyed to the members of the bereaved family.

"The Director-General and members of the staff of CSIR deeply mourn the sad demise of Dr. P. Nilakantan, Director, National Aeronautical Laboratory, Bangalore, at an early age of 54. Dr Nilakantan, was associated with CSIR for a fairly long time and became the first Director of the Laboratory in June 1959. Within a short period of less than 5 years Dr Nilakantan was able to organise NAL from scratch to the leading position in aeronautical research in India. His achievements in the fields of aeronautical sciences and engineering are well known. In Dr Nilakantan's sad demise the country has lost a distinguished aeronautical engineer of international repute."

Shri K. M. Agarwala was deputed by the Director General to go to Bangalore for participating in the last rites and to convey condolence personally to the bereaved family and the Laboratory on behalf of the Council.

STAFF NEWS

(Contd. from p. 1, col. 2)

PROF. DINESH MOHAN, Deputy Director-in-charge, CBRI, Roorkee, who has been nominated a member of the Executive Committee of the International Council for Building Research, Studies and Documentation, Netherlands, attended the meeting of the Executive Committee at Haifa (Israel) during March 13-23, 1964.

PROF. G.S. RAMASWAMY, Deputy Director, CBRI, Roorkee & Chairman of the Structural Engineering Group of the Institution of Engineers (India) was invited to act as one of the Chairmen for the International Symposium on Arch Dams held at the University of Southampton during April 20-23, 1964.

PROF. M.V. BOPARDIKAR, Assistant Director, CPHERI, Nagpur and member of the WHO Expert Panel on Environmental Health, visited U.S.A., U.K., Netherlands, France, West Germany, Czechoslovakia, and U.S.S.R. on an assignment under WHO Project No. 201-India to 'Study Graduate Teaching Methods and Organization of Public Health Engineering' in these countries.

SHRI KAMALESH RAY, Deputy Director, National Register Unit, CSIR, New Delhi, has been elected Member of the Institution of Engineers (India).

Nominations : General

SHRI J. M. DAVE & DR G. J. MOHANRAQ, Assistant Directors, CPHERI, Nagpur, have been nominated members of the Committe, Introduction of Post-Graduate Studies in Public Health Engineering, of the Nagpur University.

DR S.C. BHATTACHARYYA, Assistant Director, NCL, Poona, has been nominated India's representative on the Working Group 8 of ISO/TC 54 Essential Oils.

Nomination : ISI

PROF. S.R. MEHRA, Director & Dr R.K. Ghosh, Assistant Director, CRRI, New Delhi—Principal and alternate member respectively of the Cement & Concrete Sectional Committee.

SHRI J. D. JOGLEKAR, Assistant Director & SHRI M.P. SOOD, Senior Technical Officer : Grade I, NPL, New Delhi—Principal and alternate member respectively of the Rotating Machiney Sectional Committee.

DR A. B. CHATTERJEA, Assistant Director, NML, Jamshedpur—Chairman of the Composition of Pig Iron Sectional Committee.

SHRI P.P. BHATNAGAR, Assistant Director, NML, Jamshedpur—Memper of the Lead, Zinc, Tin, Antimony, and their Alloys Sectional Committee.

DR BH. SUBBARAJU, Assistant Director, CRRI, New Delhi—member of the Safety in Construction Sectional Committee.

SHRI P.L. AHUJA, Junior Scientific Officer, NML, Jamshedpur, has been awarded Ph.D. (Sc.) degree by the Bihar University for his thesis : *Phase transformation in electrolytic alloys with special reference to copper-cadmium alloys deposited at constant cathode potential.*

Visitors

Prof. M. Boldrini, President of Ente Nationale Idnocarburi, Italy, visited the Indian Institute of Petroleum, Dehra Dun on March 13, 1964.

Prof. K.J. Habell, Instrumenation and Technical Optics Expert, National Physical Laboratory, Teddington, U.K. and Visiting Professor at the Indian Institute of Science, Bangalore, visited the National Aeronautical Laboratory, Bangalore on March 24, 1964.

Shri T.N. Singh, Member (in charge of Industries and Minerals), Planning Commission, visited the Central Mining Research Station, Dhanbad on March 31, 1964.

Prof. S. Dedijer, Director, Institute of Social Studies, Sweden, who is on a visit to India at the invitation of the Indian Statistical Institute and the Government of India, visited the Survey and Planning of Scientific Research Unit, CSIR, New Delhi on April 8 & 9, 1964 and held discussions with the staff of the Unit on research statistics, input-output studes, research on research and different aspects of research surveys. Complimenting the work of the Unit, Prof. Dedijer stressed the need for comparing their studies with those of other countries on the basis of specifications laid down in a recent report of the Organization for the Economic Cooperation and Development.

CGCRI, Calcutta — Shri Asoka Mehta, Deputy Chairman, Planning Commission, (third from left) being explained the Work on the Utilization of Waste Mica in Paints in Paints and Greases during his visit to the Institute on March, 1964

PID Executive Council

An Executive Council for the Publications & Information Directorate (PID) has been formed with Dr D.S Kothari, Chairman, University Grants Commission, New Delhi, as Chairman. The following are the members : Prof. Santi R. Palit, Indian Association for the Cultivation of Science, Calcutta ; Dr A. R. Kidwai, Professor and Head of the Department of Chemistry, Aligarh Muslim University, Aligarh; Prof. R.C. Mehrotra, Professor and Head of the Department of Chemistry, University of Rajasthan, Jaipur : Father H. Santapau, Director, Botanical Survey of India, Calcutta ; Dr K. Venkataraman, Director National Chemical Laboratory, Poona; Dr H.A.B. Parpia, Director, Central Food Technological Research Institute, Mysore; Shri S. Basu, National Institute of Sciences of India, New Delhi; Shri Jagjit Singh, Director, Traffic-Transport, Railway Board, New Delhi ; Dr M. S. Randhawa, Director General, Intensive Agricultural Areas and Special Secretary to the Govt. of India, New Delhi; Dr S. Husain Zaheer, Director-General, Scientific & Industrial Research; Shri A. K. Mustafy, Secretary, CSIR; Financial Adviser to CSIR; and Shri A. Rahman, Chief Editor, Publications & Information Directorate, New Delhi.

Insdoc Executive Council

An Executive Council of the Indian National Scientific Documentation Centre (Insdoc) has been formed with Dr D.S. Kothari, Chairman, University Grants Commission, New Delhi, as Chairman. The following are the members : Dr Nihar Ranjan Ray, Member of Parliament, Calcutta; One representative from Indian Association of Special Libraries and Information Centres, Calcutta (Shri A.K. Mukherjee, Chief Librarian, Jadavpur University, Calcutta) ; Dr B.P. Pal, Director, Indian Agricultural Research Institute, New Delhi; Shri A. Rahman, Officer on Special Duty, Survey & Planning of Scientific Research, CSIR, New Delhi; Dr G. S. Sidhu, Deputy Director incharge, Regional Research Laboratory, Hyderabad; Dr J. Shankar, Head, Chemistry Division, Atomic Energy Establishment, Trombay; Dr P.N. Banerjee, Director, School of Foreign Languages, Ministry of Defence, New Delhi; Dr B.V.R. Rao, Librarian, Government Jubilee Library, Indian Institute of Science, Bangalore; Dr R.P. Mitra, Professor of Chemistry, University of Delhi, Delhi; Shri Y.M. Mulay, Librarian, National Library, Calcutta; Shri DA Tellis, Officer-in-charge, Technical Information Centre, Electronics & Radar Development Estate, Bangalore; Dr S. Das Gupta, Librarian, Delhi University, Delhi; Dr D.R. Kalia, Director, Delhi Public Library, Delhi; Dr S. Husain Zaheer, Director-General, Scientific & Industrial Research; Financial Adviser to CSIR; & Shri B.S. Kesavan, Director, Insdoc, New Delhi.

NOTIFICATION

It is proposed to appoint Directors for the following laboratories under the Council of Scientific & Industrial Research :

i) Indian Institute of Petroleum, Dehra Dun;

ii) Regional Research Laboratory, Hyderabad;

iii) Central Salt & Marine Chemicals Research Institute, Bhavnagar ; and

iv) National Aeronautical Laboratory, Bangalore.

There is no standard form of application. Those who wish to be considered are invited to send a statement to the Director-General, Scientific & Industrial Research. Others who wish to send nominations for these posts may kindly forward their proposals to the Director-General.

All communications will be treated as confidential. Statements and proposals should be received by the Director-General on or before May 31, 1964, at the Council of Scientific and Industrial Research Office, Rafi Marg, New Delhi-1.

PATENTS FILED

92274 : *A process for the production of moulded porous products from vegetable*—K.E. Eapen, CFTRI, Mysore.

92721 : *Improvements in or relating to a new depolarizer mix for use in alkaline primary cells*—M.A.V. Devanathan, N. Ramaswamy & S. Venkatesan, CECRI, Karaikudi.

92757 : *Improvements in or relating to the treatment of cellulosic materials to render them rot-proof and/or water-proof*—R.M. Desai, A.K. Jain & S.M. Dhanigond, Shri Ram Institute for Industrial Research, Delhi.

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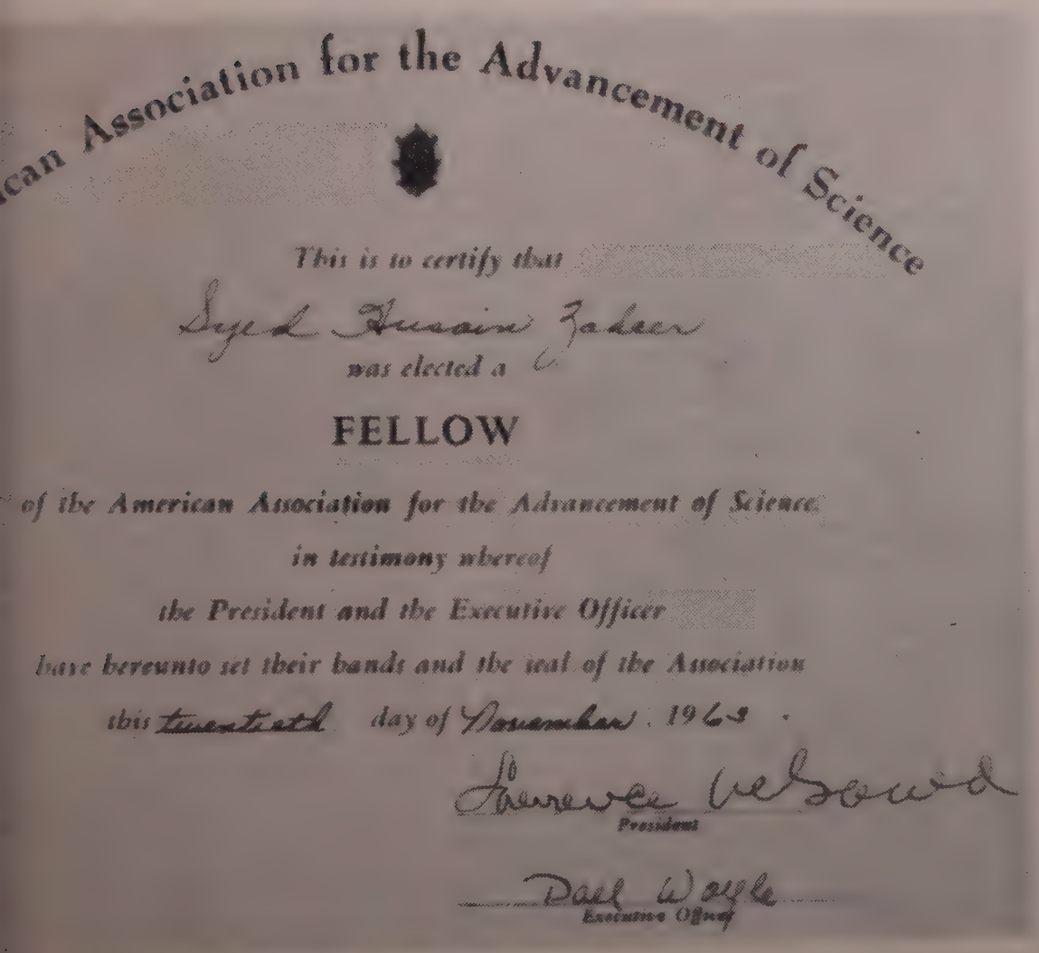
R. N. 4212/5

CSIR NEWS

VOL. 14 MAY 11, 1964 : VAISAKH 21, 1886 No. 9

DR ZAHEER ELECTED AAAS FELLOW



...can Association for the Advancement of Science

This is to certify that

Syed Husain Zaheer

was elected a

FELLOW

of the American Association for the Advancement of Science

in testimony whereof

the President and the Executive Officer

have hereunto set their hands and the seal of the Association

this twentieth day of November 1963.

President

Executive Officer

Dr Syed Husain Zaheer, Director-General, Scientific & Industrial Research, has been elected a Fellow of the American Association for the Advancement of Science (AAAS).

CECRI Refresher Courses

The Central Electrochemical Research Institute (CECRI), Karaikudi will be holding, as in the previous years, the following three refresher courses for the benefit of technical personnel in industry and government organizations : (i) *Storage battery technology* (8 weeks), (ii) *Corrosion and its prevention* (5 weeks), and (iii) *Electroplating* (12 weeks). The three courses will start from July 6, Sept. 1, and Oct. 5, 1964 respectively.

Prospectus and application forms may be had from the Director, CECRI, Karaikudi-3 (Madras State) on remittance of Re 1.00 by money order only for each course. The last date for the receipt of applications for all the courses is June 10, 1964.

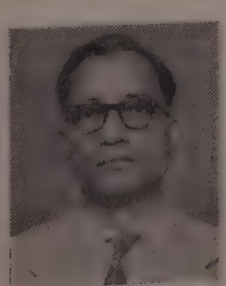
Canadian Aid to NAL

A contract agreement for the supply, erection, testing and commissioning of a 4 ft×4 ft trisonic wind tunnel at the Wind Tunnel Centre of the National Aeronautical Laboratory, Bangalore was signed with the Canadian Vickers Ltd, Montreal on April 6, 1964. The total cost of the project including civil works will be about Rs 23 million with a foreign exchange content of Rs 18.7 million (4.2 million Canadian dollars).

The tunnel of 270 ft overall length will be operated from a 150 p.s.i.g. air storage system of about 97,500 cu. ft capacity. It will cover the subsonic, transonic and supersonic (trisonic) Mach number range 0.2-4.0 and will be the major aerodynamic test facility of NAL.

Prof. Dinesh Mohan

Prof. Dinesh Mohan, Deputy Director-in-charge, Central Building Research Institute, Roorkee, has been appointed on promotion Director with effect from April 18, 1964.



Born on July 14, 1922 (Meerut, U.P.), Shri Dinesh Mohan obtained the C.E. (Hons) degree from the Thomason College of Civil Engineering, Roorkee in 1943, standing first and winning the Council of India Prize. After serving the Public Works Department (Buildings and Roads), U.P. for about two years, he proceeded to U.K. in 1945 on a two-year scholarship for research in Civil Engineering at the Road Research Laboratory and Building Research Station. On his return to India he was appointed Senior Scientific Officer and Planning Officer of the Institute. He was promoted in 1955 as Assistant Director and Head of the Soil Mechanics and Foundation Engineering Division, as Deputy Director in 1960. He became Deputy Director-in-charge in 1962.

Prof. Dinesh Mohan has published about 60 research papers in soil engineering. The under-reamed pile foundations, which he has developed for use in black cotton soil

(Contd on p. 4, col.1)

B R I E F S

NML Regional Foundry Station

The first Regional Foundry Station set up by the National Metallurgical Laboratory, Jamshedpur in the industrial estate, Batala (Punjab) was declared open on April 10, 1964 by Shri Mohan Lal, Home Minister of Punjab, in the midst of over 500 foundry industrialists from all over the country. This is the first of the four Regional Foundry Stations to be set up by the Laboratory to study the problems of foundries and give them technical assistance and operational guidance. Housed in the industrial estate over a total built-in area of about 2000 sq. ft the Batala Station is provided with modern equipment for testing foundry sands and bonding clays. The Station includes a chemical laboratory for undertaking chemical analysis of sand, metal and alloys for the foundry industry.

Speaking on the occasion, Dr S. Husain Zaheer, Director-General, Scientific & Industrial Research, said that one of the objectives of CSIR would be to assist the industries by bringing to them the latest improvements in science and technology pertaining to the particular industry. Dr Zaheer thanked the Punjab Government and the foundry industrialists in the State for their valuable assistance in establishing the Station.

Shri Mohan Lal in his inaugural speech expressed the hope that the industrialists would fully realise the value of the Station and justify the selection of Batala as the site for locating the first national foundry station.

Dr B.R. Nijhawan, Director of the Laboratory, in his welcome address announced that the testing facilities would be expanded further to include melting units to enable the Station to undertake experimental work on metal melting. The Station would be at the disposal of the foundries in Punjab for providing technical assistance at site as well as to introduce scientific control methods in their foundries.

The scope of service facilities envisaged for the Station are : (i) Practical demonstrations in testing foundry moulding sands and bonding clays and introduction of scientific quality control methods, and (ii) *ad hoc* short-term investigations of the problems referred to by the foundries and to suggest suitable remedial measures. The long-range foundry plant problems and investigations will however be handled at the National Metallurgical Laboratory and the Regional Station will act as a via media between the Laboratory and different foundries in Punjab.

NML Regional Foundry Station, Batala — Dr Zaheer speaking at the inauguration of the Station

CSMCRI Decennary Celebrations

The Decennary Celebrations of the Central Salt & Marine Chemicals Research Institute, Bhavnagar were inaugurated by Shri Balwantrai Mehta, Chief Minister of Gujarat, on April 10, 1964.

While welcoming the guests, Dr D.S. Datar, Deputy Director-in-charge, briefly reviewed the current programme of research of the Institute.

Shri Mehta referred to the research work being carried out in the Institute on marine algae, sea-water agriculture and conversion of sea water into fresh water and suggested that the Institute may take up work on the utilization of tidal power, wind power and solar energy.

The inauguration ceremony was attended by a large and distinguished gathering including scientists, technologists and industrialists from various parts of India.

To mark the celebrations the Institute had arranged a two-day seminar on Salt and By-products, a two-week first training course in Quality Control in Salt Manufacture and an exhibition and open day.

A ten-year report and inaugural number of *Salt Research & Industry* were also brought out.

Prof. C.W. Churchman

Prof. C. West Churchman of the Department of Business Administration, University of California, U.S.A., who was on a visit to India at the invitation of the Indian Institute of Business Management, Calcutta, visited Delhi as the guest of CSIR and gave a talk on 'Operations Research in the Planning of Scientific Research' at the CSIR Secretariat, New Delhi on April 20, 1964. Prof. Churchman pointed out that operational research (OR) techniques, essentially applicable to the process of planning of large complex systems, could be used to tackle problems of organisation, allocation and planning of scientific research. Illustrating this, he discussed the use of OR in solving such problems as information retrieval, processing of new ideas and design inquiry system. The talk was followed by a discussion in which many scientists participated.

RESEARCH PROGRESS

National Laboratories

CBRI, ROORKEE

Improvement of Quality of Mangalore Tiles—The Mangalore pattern roofing tile industry sustains heavy losses, as nearly 25-30 per cent of the tiles warp and crack during drying. Investigations have shown that such losses can be reduced by the addition of ammonium chloride, a cheap and indigenously manufactured chemical. The amount of ammonium chloride (electrolyte) required depends on the clay content of the soil and is generally less than one per cent of the dry weight of the soil. Commercial and full scale trials on the efficacy of such tiles, carried out in collaboration with a tile firm in Madras, have shown that losses can be reduced from 23 to 7 per cent and that the productivity can be improved by about fifteen per cent. The colour, shape and strength of the bricks can also be improved.

Sponsored Research

Studies on Applied Micronutrients in Soils—The retention and release of Cu^{++} (applied as $CuSO_4$) by three soil types of India, viz. red soil from the hilly area of Mirzapur dist., black soil, and alkali soil from Meja and Phulphur tahsils of Allahabad dist. have been studied under varying conditions of *p*H, presence of fertilizers and after ignition of soils, using a compost sample rich in organic constituents for comparison. The following are the conclusions : The capacity of retention of Cu^{++} by different soils differs greatly ; alkali soils retain the highest amount and red soils retain the lowest amount and the black soils are intermediate in their retention of Cu^{++}. In alkali soils, the applied Cu^{++} is precipitated as basic copper compound because of high *p*H, whilst in red soils the retention is lowest due to a low *p*H, typical structure and low base exchange capacity. In black soils, retention of applied Cu^{++} takes place in three forms : (i) exchangeable copper, (ii) bound with organic fraction, and (iii) precipitated as basic copper compounds. The amount of Cu^{++} retained by compost is comparatively higher than that retained by soils as it (Cu^{++}) forms insoluble compounds with humic and fulvic acids and also forms complexes with other organic constituents of compost. Destruction of organic matter with H_2O_2 results in a lower Cu^{++} retention. With rise in *p*H, the Cu^{++} retention goes up in all cases and vice versa. Presence of H^+ ions in system causes lower Cu^{++} retention because of the high cation replacing power, while at higher *p*H basic copper compounds get precipitated.

The presence of fertilizers like $(NH_4)_2$ SO_4, $NH_4H_2PO_4$, KCl, K_2SO_4 and KNO_3 in soils lowers the retention because of the antagonistic effect of cations.

The soils on ignition (for 1 hr at 600°C.) show a minimum Cu^{++} retention as a result of complete ignition of organic matter and production of inactive surface for copper adsorption—R.C. Tiwari & S.G. Misra, Chemistry Department, Allahabad University, Allahabad.

Coke Blending and Coking Research—Pilot oven tests were carried out with washed Hatnol seam coal (Raniganj coalfield) in admixture with Jamadoba washed coal, (ii) Talcher seam coal (Orissa coalfield) in admixture with Dugda washed coal ; and (iii) Ghordewa seam coal, Korba Colliery (Madhya Pradesh coalfield) in admixture with Dugda washed coal with a view to study the coking properties. The results have shown that hard coke could be obtained from the blends containing (i) a maximum of 20 per cent of washed Hatnol seam coal and requisite proportions of Jamadoba washed coal; (ii) a maximum of 20 per cent of Talcher seam coal and requisite proportions of Dugda washed coal : and (iii) a maximum of 15 per cent of Ghordewa seam coal (crushed to pass through 1.5 mm.) and requisite proportions of Dugda washed coal selectively crushed to pass 100 per cent through 3 mm.

Full-scale oven tests were also carried out with (i) blends of Argada-Sirka seam coal (South Karanpura coalfield) in admixture with Tata's Coke Ovens coal mixture, (ii) blends containing washed Argada coal in admixture with Kargali and Dugda washed coals ; and (ii) a blend containing Poniati seam coal (Raniganj coalfield) in admixture with washed coals from Kargali and Dugda. The results have shown that (i) medium hard coke of Breslau Index (B.I.) 77.3 and ash content 22.2 per cent, could be obtained from the blend containing 15 per cent of unwashed Argada-Sirka seam coal and 85 per cent of Tatas' Coke Ovens coal mixture ; (ii) hard coke (B.I., 82.8; ash content, 21.5%) could be obtained from the blend containing 50 per cent of Dugda II washed coal and 50 per cent Kathara washed coal, the grain size being 100 per cent through 3 mm., and (iii) hard coke (B.I., 80.3%; ash content, 21.9%) could be obtained from the blend containing 15 per cent of Poniati seam coal, 35 per cent of Dugda washed coal and 50 per cent of Kargali washed coal.

Research Papers

Narayanan, K.S. & Namboodiripad, C.P. (CECRI, Karaikudi)—Redoxokinetic and impedance titrations of zinc and cadmium salts with potassium ferrocyanide. *J. electroanal. Chem.*, **6** (1963), 480.

Sharma, V.S., Mathur, H.B. & Biswas, A.B. (NCL, Poona)—Jahn-Teller stabilization and entropy changes accompanying the formation of metal-amino acid complexes. *J. inorg. nucl. Chem.*, **26** (1964), 382.

Dewan, H.S. (CEERI, Pilani)—Electronic flash tubes. *Def. Sci. J.*, **13** (1963) (Suppl.), 386.

Subhash Chandra & Khepar, S.D. (CBRI, Roorkee)—Double under-reamed piles for foundations in black cotton soils. *Indian Concr. J.*, **34** (2) (1964), 50.

Ramaswamy, G.S., Ramaiah, M. & Ballal, B.Y. (CBRI, Roorkee)—Matrix methods in structural analysis : Part III. *Indian Concr. J.*, **38** (2) (1964), 68.

Pancholy, M. & Singal, S.P. (NPL, New Delhi)—Ultrasonic absorption due to chemical relaxation in aqueous solutions of electrolytes. *Nuovo Cim.*, Ser. 10, **29** (1963), 1027; Studies on ultrasonic velocity in aqueous solutions of electrolytes. *Nuovo Cim.*, Ser. 10, **30** (1963), 5.

(*Contd from p. 1, col. 2*)

areas, are being used on large construction projects in Central India. He is a member of the Institution of Engineers (India), Executive Committee of the National Society of Soil Mechanics and Foundation Engineering, and Executive Committee of the International Council of Building Research Studies & Documentation.

Dr S.H. Zaidi

Dr Sibte Hasan Zaidi, Deputy Director, Central Drug Research Institute, Lucknow, has been appointed Director, Indian Institute for Biochemistry and Experimental Medicine, Calcutta with effect from April 20, 1964. Dr Zaidi's biography has been published in *CSIR News*, Vol. 13, No. 19, p. 4.

Dr Janaki Ammal

Dr E.K. Janaki Ammal has been appointed Emeritus Scientist at the Regional Research Laboratory, Jammu with effect from April 16, 1964.

STAFF NEWS

Dr Kalpathy Gopalakrishnan Ramanathan, Senior Scientific Officer : Grade I, National Physical Laboratory, New Delhi, has been appointed on promotion Assistant Director in the Laboratory with effect from April 1, 1964.

Shri M.R. Verma, Senior Scientific Officer : Grade I, National Physical Laboratory, New Delhi, has been appointed on promotion Assistant Director in the Laboratory with effect from April 6, 1964.

Shakuntala Amir Chand Prizes

The Indian Council of Medical Research (ICMR) awards annually on All India basis prizes, known as Shakuntala Amir Chand Prizes, from the Col. Amir Chand Trust Fund. Applications are invited by ICMR for the award of four prizes of the value of Rs 300 each for best published research work in any subject in the field of medical science including clinical research. The term 'clinical research' covers research into the mechanism and causation of diseases and their prevention and cure, and includes work on patients in hospitals, field studies in epidemiology and social medicine and observations in general practice.

The prizes are open to medical and non-medical graduates who are Indian nationals and not above 40 years of age on January 1, 1964. The research paper submitted for consideration must have been published in Indian or foreign journals in the calender year 1963, on work done in institutions in India only. Papers published on work started in India but completed abroad will not be acceptable. In publications with joint authorship the prizes shall be divided between authors in such proportion as may be decided by the Selection Board. The person who applies for the prize should clearly indicate his/her role in the work presented in the paper.

Candidates should submit, through proper channel, ten reprints of their papers to the Director, Indian Council of Medical Research, New Delhi, by September 1, 1964, accompanied by a short biographical sketch and two passport size photographs.

National Chemical Laboratory, Poona

An illustrated brochure (pp. 28) bearing the above title has been published. The brochure contains an outline of the scope of the Laboratory, description of the campus and buildings, various divisions and strength of staff, research programme and other activities. Information on research facilities available in various divisions, processes released to industry. Government sponsored projects and applied projects completed or in progress is also included.

Printed and published by Shri S.A. Chari, Publications & Information Directorate, CSIR Delhi-12, at Asia Press, Delhi-6

R. N. 4212/5

CSIR NEWS

VOL. 14 MAY 25, 1964 : JAISTA 4, 1886 No. 10

FOUNDATION STONE OF IPIRA LABORATORY LAID

The foundation stone of the Laboratory of the Indian Plywood Industries' Research Association (IPIRA), the latest in the chain of Cooperative Research Associations sponsored by the Council of Scientific and Industrial Research, was laid by Shri S. Nijalingappa, Chief Minister of Mysore, on April 26, 1964 at Bangalore.

Speaking on the occasion, the Chief Minister said that there was a compelling need to increase the forest wealth and that the motto of everybody should be 'to create wealth out of waste'. He assured the support of the Mysore Government to the industries for setting up research laboratories.

Shri B. Rachiah, State Minister for Forests and Fisheries, who presided over the function, suggested to the plywood manufacturers to reduce the cost of production to enable the Indian plywood to compete in the international market.

Shri A. K. Kaderkutty, Acting President of the Association, in his inaugural speech pointed out the increasing demand for plywood and said that there were 80 factories producing 18 million square meters of various types of plywood required for tea chests containers, and for marine, aircraft and decorative purposes.

Dr G. P. Kane, Deputy Director-General and Chairman of the Plywood Industry Voluntary Contribution Cess Committee, traced the history of the industry from 1951 and indicated how funds were collected for establishing the research laboratory. He referred appreciatively to the work being done on adhesives in the temporary laboratory.

Dr D. Narayanamurti, Director, IPIRA, read the messages received from distinguished scientists and institutions in India and abroad. Dr A. Seetharamiah, Industrial Adviser (Chemicals), Government of India, proposed the vote of thanks.

Shri K.G. Krishnamurthi

Shri K.G. Krishnamurthi, Technical Secretary to the Director-General, CSIR, has been appointed Officer on Special Duty at the National Aeronautical Laboratory, Bangalore, as a temporary measure. Shri Krishnamurthi will exercise all the powers of the director and will hold this post in addition to his own.

STAFF NEWS

Appointments

SHRI D. K. SHASTRI—Senior Scientific Officer : Grade I, CMERI, Durgapur (April 10, 1964).

DR R. K. SHARMA—Pool Officer, RRL, Jammu (April 6, 1964).

Promotions

SHRI RADHEY SHIAM—Accounts Officer, CSIR Secretariat, New Delhi (Feb. 1, 1964).

SHRI A. U. MOMIN & DR A. V. DEO, Junior Scientific Officers—Senior Scientific Officers : Grade I & II respectively, NCL, Poona (Feb. 14, 1964).

SHRI S. K. MEHTA, Senior Scientific Assistant—Senior Scientific Officer : Grade II, RRL, Jammu (April 3, 1964).

SHRI M. B. NARASIMHA, Senior Scientific Assistant, RRL, Hyderabad—Chemical Engineer (Senior Scientific Officer : Grade I), RRL, Jammu (April 8, 1964).

SARVASHRI B. P. CHOUDHARY, P. S. RAO, P. R. MEHTA, V. P. PANDYA & D. R. BAXI, Senior Scientific Assistants—Senior Scientific Officers : Grade II, CSMCRI, Bhavnagar (May 8, 1964).

SHRI K. VENKATACHALAM, Senior Stenographer—Personal Assistant (Tech.), CSMCRI, Bhavnagar (May 8, 1964).

(Contd on p. 2 col. 2)

Dr Hari Narain

Dr Hari Narain has been appointed Director of the National Geophysical Research Institute, Hyderabad with effect from March 31, 1964.

Born on Sept. 21, 1922 at Mainpuri (U. P.), Dr Hari Narain had a brilliant academic career in the Allahabad University, taking his B.Sc. (Hons) and M. Sc. degrees in physics in the first division and occupying consistently the first position. During 1943-1950, Dr Hari Narain worked as lecturer in physics at the K.P. College, Allahabad and in the Allahabad University, and in 1950 was awarded the D. Phil. degree for his thesis, 'Analysis of Raman and infra-red spectra of some molecules and crystals'.

In February 1950, Dr Hari Narain proceeded to Australia on a Unesco Research Fellowship at the Sydney University, where he was appointed lecturer in charge in geophysics at the University. He was awarded the Ph. D. degree in geophysics of the Sydney University in 1954 for his thesis, 'Regional gravity traverses in Eastern and Central Australia and their interpretation in terms of geological and crustal structures'. During his stay at the Sydney University he acted as consultant to various oil companies in Australia.

Returning to India in 1956, Dr Hari Narain joined the Oil & Natural Gas Commission (ONGC). He served the Commission as Senior Geophysicist, Superintending Geophysicist and, since March 1962, as Director of the Research & Training Institute, ONGC, during which time he was in charge of geophysical surveys for oil and later of applied research and training in exploration, development and production.

(Contd on p. 4 col. 1)

B R I E F S

CSIR Annual Report : 1963-64

The Annual Report of the Council of Scientific and Industrial Research for 1963-64 has been published. The report (Royal 8 vo, pp. 37+104) summarises the multifarious activities of the Council. One of the special features of the report is the presentation of 'Brief Record of Research' in which research contributions have been classified for the first time subject-wise instead of institution-wise. The report also includes, among other items, institution-wise distribution of research schemes and fellowships ; staff (including research fellows); research papers published, patents, and processes developed.

Salt Research and Industry

The inaugural number of this journal has been brought out in April 1964 by the Central Salt & Marine Chemicals Research Institute, Bhavnagar. The publication (Crown 4 to; pp 34+22) which introduces the readers to the activities and main achievements of Institute during 1954-64, contains the following six articles : (i) Origin of salt : I— Theories ; (ii) Growth pattern of salt industry in India : I— Survey ; (iii) Mechanization in salt farms; (iv) Manufacture of potash fertilizers; (vi) Magnesium chemicals in industry; and (v) Marine algal cultivation. A section of the periodical is devoted to featuring news about the Institute. The issue also contains abstracts of papers presented at the Seminar on Salt & By-products held at the Institute on April 10 & 11, 1964.

CSMCRI Ten-Year Report

A ten-year report : 1954-64 has been published by the Central Salt & Marine Chemicals Research Institute, Bhavnagar. The report (Crown 4 to : pp. 50) contains a brief history and scope of activities of the Institute and a summary of the important contributions of the Institute under the following projects ; Salt, Sea water utilization, Marine chemicals, Marine algae, Chemical engineering and Operational research and extension. A list of research papers published and patents taken is also included under the last project.

CLRI Home Journal

This monthly periodical (cyclostyled) is being issued from May 1964 by the Central Leather Research Institute, Madras for the benefit of the staff of the Institute and its regional extension service centres.

Quality Control in Salt Manufacture

A two-week training course in Quality Control in Salt Manufacture, inaugurated on April 13, 1964 at the Central Salt & Marine Chemicals Research Institute, Bhavnagar by Dr Mata Prasad, the first Director of the Institute, concluded on April 25, 1964. The course included special classes in (i)chemical and instrumental methods of analysis, (ii) scientific methods of salt manufacture, (iii) soil stabilisation, (iv) salt of different grades, and (v) recovery of by-products. The trainees, which included 6 nominees from the Salt Department of the Government of India and 6 representatives from private salt industries, were given work on routine analysis of brine, bittern, salt and mixed salt. Lectures and practicals were conducted by the members of the staff of the Institute. The trainees attended the Decennary Celebrations of the Institute and participated in the seminar on Salt & By-products and visited salt works of Bhavnagar.

Shri M.C. Chagla

Shri M. C. Chagla, Union Minister of Education and Vice-President, CSIR, accompanied by Dr S. Husain Zaheer, Director-General, Scientific & Industrial Research, visited the Regional Research Laboratory, Hyderabad on April 4, 1964. Addressing the staff of the Laboratory, Shri Chagla said that the industrial progress of the country and its scientific advance depended much on the work being done in the national laboratories.

STAFF NEWS

(*Contd from p. 1, col. 2*)

SHRI M. V. SUBRAHMANYAM, Civil Engineer, CSIR, New Delhi, took charge as Clerk of Works, BITM, Calcutta (April 27, 1964).

DR S. MUKERJEE, Deputy Director, IIBEM, Calcutta, has been invited by the International Committee on Bacteriological Nomenclature of the International Association of Microbiological Societies to work as one of the five members of the Sub-Committee on the Taxonomy of Vibrios.

DR D. TIRUMALESA, Senior Scientific Officer : Grade I, NAL, Bangalore, attended the Specialists' Meeting on Laboratory Studies of Thermally Ionised Gases at Toronto/Ottawa, during April 6-8, 1964.

SHRI R. CHOUBEY, Senior Scientific Officer, NML, Jamshedpur, resumed duties on April 3, 1964 after completing 12 months' training in U.K. under the Colombo Plan in 'High temperature creep research studies of metals and mechanical metallurgical studies'.

DR S.L. KAPUR, Assistant Director, NCL, Poona, proceeded to U.S.S.R. on March 21, 1964 on a two-month visit to the laboratories and institutions connected with polymer science, under the Indo-Soviet Cultural Exchange Programme.

DR A.P. MITRA, Assistant Director, NPL, New Delhi, has been elected a 'Corresponding Member' of the International Academy of Astronautics of the International Astronautical Federation.

SHRI V.M. BUCHAR, Senior Scientific Officer, NPL, New Delhi, has been elected a Fellow of the Royal Institute of Chemistry, London.

SHRI MOHD SWALEH, Senior Scientific Assistant, RRL, Hyderabad, has been awarded the Ph. D. degree in chemistry of the Aligarh Muslim University for his thesis : *Studies on essential oils of* Cymbopogon martini.

Correction

The news item relating to Shri C. R. Gupta (*CSIR News*, Vol. 14, No. 8, p.1.) should read as : Shri C.R. Gupta, Officer on Special Duty, CRRI, New Delhi, was relieved of his duties on April 14, 1964 consequent on his appointment as Development Officer in the Directorate-General of Technical Development.

RESEARCH PROGRESS

National Laboratories

CRRI, NEW DELHI

Effect of White Cement Concrete on Top of Concrete Pavement—Variations in temperture between the top and bottom surfaces of the concrete road slabs result in thermal stresses, accounting for nearly 60 per cent of the total stresses in a pavement. Investigations have shown that such stresses could be reduced by about 17 per cent by incorporating a white concrete on top of the concrete pavement. Design calculations based on these reduced stresses show that the thickness of the pavement could be reduced to effect a saving in the total cost of construction. A combination of 6 in. normal concrete with $\frac{1}{2}$ in. top of white concrete has been found to have the same structural properties and load carrying capacities as 7 in. of normal concrete. Two experimental slabs have been laid recently on the National Highway No. 2 near Faridabad and calculations have shown a saving of 7.5 per cent in the over-all cost of construction—R.K. GHOSH & R.KRISHNAMACHARI.

Sponsored Research

Matabolic Relationship between Dietary Protein and Iron—A series of experiments using rats as experimental animals have been performed in order to find out the role of protein and its breakdown products in iron absorption.

The experiments indicate that protein is an important factor for the proper and efficient storage of iron in the body. A small amount of protein, especially its breakdown products, can remarkably improve the storage of iron. This enhancement in the storage is due to increased absorption through the intestine, as is evident from the observation that protein-split products accompanying iron directly into the stomach cause higher storage of iron in the body. Enzymatically digested protein is the ideal medium possibly because the peptides released after digestion of protein with enzymes bind iron and the resulting complex products can make easy way through the intestinal mucosa. This mechanism is supported by the fact that peptides and amino acids form chelates with iron and are easily carried via the intestinal mucosa into the blood stream—R.K. BHATTACHARYA & U.P.BASU, Bengal Immunity Research Institute, Calcutta.

Physiological Changes in Maturing Ovules of *Papaver somniferum* L.—The investigation was undertaken, using excised ovules from the day of pollination till maturity, to find out whether there was any correlation between patterns in chemical changes and the anatomical changes during the maturation of seeds. The endogenous oxygen uptake and major changes in carbohydrates, proteins, nucleic acids and enzymes have been worked out.

A very close correlation between the nucleic acids and nucleases was observed and the growth pattern of ovules and the accompanying anatomical changes showed definite relation with the synthetic, and/or hydrolytic activities of the ovule.

The endogenous oxygen uptake as a function of age exhibited significant drifts. In general, four peaks corresponding to 0-2, 4-6, 7-9 and 21-24 days after pollination were obtained whether the data were computed on the basis of dry and fresh weights, per mg. protein or per ovule basis. These periods very closely coincided with divisions of zygote and endosperm nuclei, wall formation in the endosperm, and the elongation of cotyledons.

The activities of amylases, succinic dehydrogenase and acid phosphatase were maximal 6-8 days after pollination when cell walls were laid down in the free nuclei of the endosperm. A small but appreciably increased activity was found 20-22 days after pollination. The soluble and insoluble carbohydrates correlated well with the amylase activity as well as with respiration. Ovules showed the greatest concentration of soluble sugars (as much as 25% by dry weight) 5-6 days after pollination. This concentration is about five times that of insoluble carbohydrates. Chromatographic analysis indicated the presence of three sugars, fructose, glucose and sucrose, the concentration of fructose being maximum 5 days after pollination and the other two sugars being present in comparatively low concentrations. The reducing sugars were abundant up to 15-16 days following pollination but later they got partly converted to sucrose. The seed maturation was also followed by a conversion of a large fraction of soluble sugars into insoluble ones.

The activity of glutamic-alanine transaminase was rather low till the formation of cellular endosperm. The peak activity was seen 16-17 days after pollination sometime in the middle of the maturation period of ovules. The protein accumulation followed a typical sigmoid pattern and the period of exponential increase was concomitant with transaminase activity. Soluble carbohydrates predominated till the time of formation of cellular endosperm and only later during the accumulation of food reserves in the endosperm the protein synthesis occurred.

The trends exhibited by DNA, RNA and water extractable proteins (predominantly enzymes) seem to be interlinked. The maximal level of RNA per ovule was found 11 days after pollination and increasingly lower values were obtained before and after this, though small peaks were seen 4, 17 and 24 days after pollination. Similarly, the amount of DNA per ovule was maximum 15 days after pollination and in the next two days the level dropped to less than one-half which is correlated with increased DNase activity.

Research Papers

DEB, A. K. & AGARWAL, V. S. (CBRI, Roorkee)—A new clamp for dial gauges as substitute for magnetic holders. *J. Indian nat. Soc. Soil Mech. Found. Engng*, **3** (1) (1964), 64.

GUPTA, S. & GUPTA, A.K. (CFRI, Jealgora)—Properties of bright and dull coals. *J. Mines Metals Fuels*, **11** (6) (1963), 12.

SHRIKHANDE, K.Y., CHAKRABARTI, H. C., BHATTACHARJEE, H. C. & SINHA, M. P. (CFRI, Jealgora)—Semi-pilot plant studies on low temperature carbonization of some weakly caking coals from Raniganj field. *J. Mines Metals Fuels*, **11** (7) (1963), 7.

(Contd from p. 1, col. 3)

He was Conference Officer in charge of the Seminar on Development of Petroleum Resources in Asia and Far East held under the aegis of ECAFE at New Delhi in 1958.

In January 1960, he attended as Indian delegate the ECAFE Seminar on Aerial Surveys, held in Bangkok, and was elected chairman of the Research & Training Committee on Aerial Surveys. Between February and June 1960, he visited U.S.A., U.K. and Canada under a T.C.M. Fellowship. He was also a member of the ONGC delegation which visited in 1961 the French Petroleum Institute, Paris and Ente Nationale Idnocarburi, Italy. He also attended as Indian delegate the U.N. Inter-regional Seminar on Petroleum Development Techniques held in New York in 1962.

A specialist in the field of geophysical exploration for oil, Dr Hari Narain has conducted researches both in applied and pure branches of geophysics and has guided research in geophysics leading to the M.Sc. and Ph.D. degrees of the University of Sydney.

Dr Hari Narain is a Fellow of the American Geophysical Union and a member of the European Association of Exploration Geophysicists. He has a number of publications to his credit both in Indian and foreign journals.

Dr G.N. Acharya

Dr G.N. Acharya, Senior Scientific Officer : Grade I, has been appointed on promotion Assistant Director, Central Electronics Engineering Research Institute, Pilani.

Born on Feb. 13, 1929 in Maharashtra, Shri Acharya had his education at Bombay and Poona. After getting his M. Sc. degree in physics in 1953, he worked as a Government of India Senior Research Scholar at the Institute of Science, Bombay and was awarded the Ph.D. degree of the Bombay University for his thesis, 'The effect of ultrasonic waves on some processes in high frequency discharge'.

In 1957, Dr Acharya proceeded to U.K. under a Burmah-Shell Scholarship for advanced training and research in electronic instrumentation. After completing a post-graduate course in electronics with a thesis on a 'Nonlinear servomechanism' at the University of Edinburgh, Dr Acharya continued his research work there and put into operation an analogue computer for the solution of nonlinear differential equations. In 1958, he joined the Marconi College, Chelmsford, for a course in radar engineering and was later attached to Marconi's Wireless, Telegraph Co. Ltd, Chelmsford and Marconi Instruments, St Albans for practical experience in electronic instrumentation.

Returning to India in 1959 he worked for a short period at the National Physical Laboratory, New Delhi and joined the Central Electronics Engineering Research Institute, Pilani, as Senior Scientific Officer. Dr Acharya has been guiding research, design and development work in the field of electronic instrumentation and also keeping liaison with the electronics industry in India.

Dr Acharya has been a graduate member of the British Institution of Radio Engineers for more than ten years and a Fellow of the Rajasthan Academy of Sciences. He has a number of publications and industrial processes to his credit.

PATENTS

Filed

92758 : *Improvements in or relating to the treatment of cellulosic materials to render them resistant to micro-organisms*—R.M. Desai, A.K. Jain & S.M. Dhanigond, Shri Ram Institute for Industrial Research, Delhi.

92977 : *Improvements in or relating to the manufacture of hexachloroethane* — S. P. Mukherjee, M. Goswami, S. Soundararajan, N. Sadasivan, Ranjit Kumar Sen & L.K. Doraiswamy, NCL, Poona.

92978 : *Preparation of solasodine from Solanum aviculare leaves*—Tej Singh, V.N. Vashist & K.L. Handa, RRL, Jammu.

93146 ; *A transistorized yarn tension measuring and recording instrument*—A. Pande, & S.R. Ranganathan, Shri Ram Institute for Industrial Research, Delhi.

U.K.

9649/64 : *Improvements in or relating to the processing of textiles for imparting abrasion resistance and wash and wear characteristics*—R.M. Desai, N.B. Sattur, J. Varghese, J.C. Patel & V.B. Chipalkatti, Shri Ram Institute for Industrial Research, Delhi.

Germany

C31845 III/66b : *Processing of dry ready-to-wet sausage casings from cattle, goat, sheep, pig and other mammalian intestines*—S.K. Barat, CLRI, Madras.

Accepted

81779 : *Process for enamelling of iron or steel directly with white or coloured vitreous enamels*—Atma Ram, S.S. Verma & V.G. Upadhyaya, CGCRI, Calcutta.

82189 : *Production of dextrotartaric and oxalic acids*—H.G. Vartak, S.G. Patil & V. Jagannathan, NCL, Poona.

83874 : *A process for the treatment of fish body oil*—M. R. Verma, V. D. Puri & J. Rai, NPL, New Delhi.

84670 : *Improvements in or relating to electrolytic cells*—N. Dhananjayan, H.K. Chakrabarti, T. Banerjee & R.C. Verma, NML, Jamshedpur.

Sealed

77224 : *Synthetic esters as speciality lubricants for low temperature performance and particularly for the lubrication of clocks and watches*—K.D. Pathak & B.C. Subba Rao, NCL, Poona.

77449 : *A surgical suturing instrument*—A.P. Jayaraj, CFTRI, Mysore.

77713 : *A process for the production of 5-keto-d - gluconic acid*—I. J. Babbar, M. C. Srinivasan, H. G. Vartak & V. Jagannathan, NCL, Poona.

78389 : *A process for the manufacture of briquettes and moulded shapes from industrial wastes like slack coal, coke breeze and fine metallic ores mixed with coke breeze*—N. Biswas, T.V. Subramanian, M.S. Iyengar & A. Lahiri, CFRI, Jealgora.

78779 : *Formation of lustrous film on glass*—Atma Ram, S.N. Prasad, K. P. Srivastava & V. K. Vaish, CGCRI, Calcutta.

79075 : *Improvements in or relating to the two-stage electrochemical production of dialdehyde starch*—H.V. Udupa, M.S. Venkatachalapathy & R. Ramaswamy, CECRI, Karaikudi.

81247 : *An improved moulding device for the preparation of soil specimens for unconfined compressive strength test*—D. K. Sundd & A. K. Bhattacharya, Agra College, Agra.

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CSIR NEWS

VOL. 14 JUNE 8, 1964 : JAISTA 18, 1886 No. 11

CSIR MOURNS SHRI JAWAHARLAL NEHRU'S DEMISE

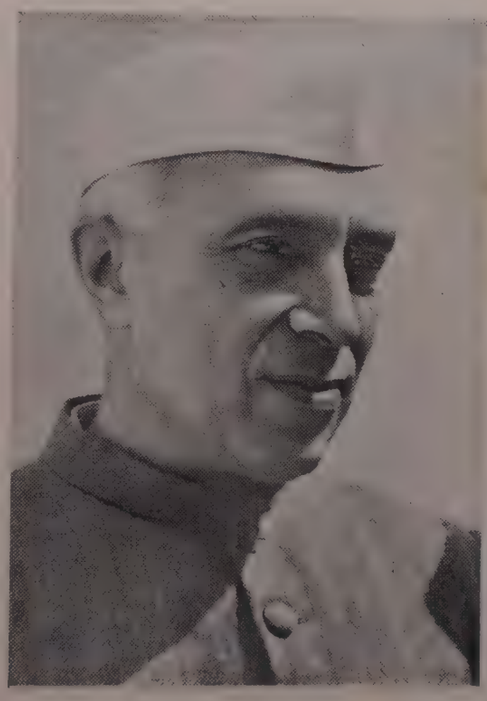
We record with profound sorrow the demise of the Prime Minister Shri Jawaharlal Nehru who had been President of the Council of Scientific & Industrial Research since 1948.

All the institutions functioning under the Council throughout the length and breadth of the country have sent condolence messages to Shrimati Indira Gandhi and the members of the bereaved family. The condolence resolution passed by the staff of CSIR Secretariat and the message of the Director-General, Scientific & Industrial Research (dated May 29, 1964) sent to all the national laboratories are reproduced in the following columns.

The Association of Scientific Workers of India convened a meeting at the National Physical Laboratory, New Delhi on June 4, 1964 to pay homage to the memory of Shri Jawaharlal Nehru. Shri M. C. Chagla, Minister for Education and Vice-President of CSIR who presided over the meeting said that the passing away of Jawaharlal was not merely the end of a great son of India, it was the end of an era, and the end of an epoch. Various scientific organizations including the All India Institute of Medical Sciences, Defence Science Organization, Indian Council of Agricultural Research, Indian Council of Medical Research, Institution of Engineers, University Grants Commission and the India Meteorological Department, associated themselves in the meeting.

Research institutions and scientific societies of a number of foreign countries have also sent messages of condolence to the Director-General and directors of national laboratories. One of the messages received by the Director of Insdoc is reproduced.

"Please accept my sincere condolences with regard to the heavy loss your people suffered in the death of Prime Minister Jawaharlal Nehru"—Professor Mikhalov, Director, Institute of Scientific Information, Academy of Sciences, Moscow.



(Nov. 14, 1889—May 27, 1964)

Nehru and Science : Special Issues of Science Reporter & Vigyan Pragati

With a view to commemorate the memory of our late beloved Prime Minister Pandit Jawaharlal Nehru, the Director-General, Scientific & Industrial Research, has proposed to bring forth special numbers of 'Science Reporter' and 'Vigyan Pragati, the two popular science journals of the Council of Scientific & Industrial Research.

The special numbers, in which Pandit Nehru's speeches, articles and ideas will be compiled under the title 'Nehru and Science' are especially intended to bring out his ideas about scientific planning, role of science and technology in social and economic regeneration, scientific and technological exchange and peaceful exploitation of science and technology and the building up of a scientific temper in the country.

Scientists in our country and quite often distinguished scientists abroad were fortunate to come into close contact with this great soul and share his ideas and thoughts. It is therefore desired that the personal experiences of the scientists with Nehruji might be preserved so that such experiences could serve as guiding light to the future scientists.

CSIR Staff Condolence Message

We have assembled here on one of the saddest occasions in the history of our country. Our great and beloved Prime Minister Shri Jawaharlal Nehru has left us for ever.

While the entire country, nay the whole world, is mourning his death, we the staff of the Council of Scientific & Industrial Research feel forlorn and orphaned because the CSIR and, in fact, the scientific era in the country, owe its origin to the foresight and vision of the late Prime Minister.

Our late Prime Minister realized at a very young age that the twentieth century will see an upsurge of science, and prosperity of his own country will depend upon the development of scientific research. When he became the Prime Minister he lost no time in collecting the best scientific brain available in the country, and for the first time the country got the necessary inspiration to develop science and technology largely through CSIR. Prime Minister Shri Nehru's interest in science was so intense that in spite of his onerous duties he chose to be the President of CSIR and continued to be so until his last day on the earth.

Although he had become weak and frail in the last three or four months and doctors had advised him rest, the Prime Minister presided over the last meetings of the Board and Governing Bodies of CSIR held in March this year.

Only a few days before his death in his personal letter to our Director-General, he had sent his consent to inaugurate the forthcoming symposium on 'Science and the Nation' being organised by the Association of Scientific Workers of India in July 1964.

The scientific era generated by the Prime Minister had already taken its roots in the country and the best homage that we the scientific workers in the country can pay to him would be to carry forward the ideals for which he lived and died. Panditji loved hard work and we should develop scientific attitude and work hard. We, the staff of the CSIR, assembled here today, May 29, 1964, record our profound sorrow over the demise of our most beloved and revered Prime Minister and the President of CSIR and hereby resolve that these sentiments may be conveyed to Shrimati Indira Gandhi.

MAY HIS SOUL REST IN PEACE.

Director-General's Message

Friends,

By now you have all heard of the sad and sudden demise of our beloved Prime Minister and the President of the Council of Scientific and Industrial Research.

Pandit Jawaharlal Nehru had realised quite early in his life that the path to India's progress and prosperity lay not only through dynamic social and political reforms but also through concerted planning for organising the country's resources and building up its industries on modern lines. One of his first endeavours after taking office as Prime Minister of Free India was to give thought to the promotion of Science and Technology in the country. It was through his pioneering efforts that the Council of Scientific and Industrial Research came into its existence in its present form with the chain of national laboratories functioning under it. His faith in Science and Technology as an instrument of social welfare is amply proved by the way he formulated the policies of the Government and initiated the several Five Year Plans.

We in the Council who have been associated with him and have worked under his wise and sympathetic guidance and shared his inspiration and conviction in Science and Technology as an instrument of social and economic progress realise today the enormous void which has been created in our midst as a result of his sudden departure from amongst us.

As a statesman and a politician, he will have an assured place in the history of mankind. His intervention at many crucial and decisive moments on the international scene during the last 17 years of his office determined the shape of world events. He was the builder of Free India and the architect of its many policies. His ideals and convictions which arose out of innate liberalism of thought and action were responsible for the image of Free India as it stands out in the world today.

So far as we in the Council of Scientific and Industrial Research are concerned, we owe to him and his personality alone, the enormous development of Science and Technology in the country which is reflected today in every sphere of activity of the nation. It was he who gave to us the necessary scientific climate in which alone Science and Technology can grow.

The best homage that we can pay to our departed leader would be to carry forward the ideals for which he lived and died.

The enormous void left by his death and the unfailing but now missing support which science and scientists received from him can now be filled by us only through harder work, greater effort and greater sincerity and devotion to the tasks before us.

* * *

Science and technology were a passion with Jawaharlal Nehru. He was one of the the few world leaders who made the promotion of science on a national scale one of their main concerns—scientific development for the sole purpose of raising the living standard of the common man. Reproduced below are a few excerpts from his speeches made during opening functions of national laboratories.

"If science is Truth, then you must follow that Truth. People think of science as something isolated, in terms of test tubes and mechanical appliances which have no other relation to life except as providing them some conveniences. Well, certainly science does and should provide conveniences. Science, indeed, has built up the structure of modern life and you cannot exist without it. Wherever you go, you come across some major application of science, and yet the people who utilize the application from morning to evening and profit by it, do not realise what lies behind it—the manner of thinking and the manner of acting and functioning. They take things for granted. They do not know the long history of science, of trails and errors, of experiments and hundreds of failures, and then the success, accidental or deliberately strived for. Nor do they think of the things which are called scientific temper, scientific mind, and scientific method, which really are more important than the actual discovery.

"As I think of those tremendous advances that science has made in the past and the great advances that I hope it is going to make in the future, I am so fascinated by them that I feel how much better it would have been for me to be the Director of this Laboratory, if I had the competence, than to be the Prime Minister." —Opening of the National Physical Laboratory, New Delhi (Jan. 21, 1950).

* * *

"I think it is rather an exciting conception to see large numbers of young men and women coming into these laboratories and research institutes in India and working with zeal and enthusiasm for the advancement of science in India, and through science, the advancement of the Indian people.

"I hope that so far as these laboratories are concerned they would help to some extent at least in opening the doors to large numbers of young men and women and give them opportunities to do good work for the country in the cause of science and in application of science for the public good. Now, I am not at all against the conception of scientists strictly confining themselves to pure research. It is essential to have their freedom. But in the present-day world when we have to face tremendous problems, it is the function of a scientist to a large extent, keeping these problems in view — the major problems — to try to help directly and indirectly by creating an atmosphere of objective and dispassionate consideration of these problems. These problems if not solved will swallow us. I think that the conception of a large number of research institutes and laboratories and the like will help not only the cause of science but will also help in creating an atmosphere which is perhaps more important for considering the vital problems."—Opening of the National Chemical Laboratory, Poona (Jan. 3, 1950).

"If we look at science in the true way, and if we think of these research institutes and laboratories in a fundamental sense, then they are something more than institutes for finding out little ways of improving things, of how this or that should be done: they have to gradually affect not only the minds of those who work in them, but the minds of others too—and the minds of rising generation more especially, so that the nation may grow up imbibing the spirit of science and be prepared to accept the new task even though it has to discard something of the old."—Opening of the Central Fuel Research Institute, Jealgora (April 22, 1950).

"Scientific research is the only sure way by which science can be harnessed for the best of public use, and for the betterment of the nation. Many other countries have beaten us in such development, and though we cannot make up the work of centuries in a few years, there is this distinct lesson to learn that humanity can be lifted out of misery only by science and its proper use. .....If we do not use science, we will be a backward country, and a third-rate nation.

"The task before every true Indian today is to help in bringing about a speedy advancement of the standard of living of the 360 millions in the country. It is not easy to give a new face to so large a country which contains one-fifth of the world's population. Perhaps the only way of doing this difficult job is to bring about a temper of science so that it takes away the rut of sluggish habit and brings about an era of blissful prosperity.

"We have made these national laboratories basically to improve science and adapt scientific methods which will suit our country's needs."—Opening of the Central Building Research Institute, Roorkee (April 12, 1953).

"We should approach everything with a reverent scientific approach, with eyes open, ears open, and try and experiment. The way one should approach everything in life, the way one should seek truth and that is the only way to find truth, and not with eyes closed and ears closed and just trusting any kind of rumour that may reach our ears. And, finally, I like these scientific laboratories growing up, because I believe and hope that they will gradually make the Indian people more and more scientific in outlook—scientific not merely in the sense of dabbling in test tubes and laboratories and the like, but get that type of mind and that type of thinking which scientists ought to have and which they do not always have"—Opening of the Central Drug Research Institute, Lucknow (Feb. 1951).

RESEARCH PROGRESS

National Laboratories

NML, JAMSHEDPUR

Beneficiation of Fluorspar from Ambadongar–Experiments on beneficiation of two types of fluorspar samples, fine grained disseminated type and coarse grained veinous type, obtained from Ambadongar, Baroda dist. and received from the Geological Survey of India, have shown that the disseminated variety (CaF_2, 34.7; SiO_2, 56.0; Al_2O_3, 1.7; S, 0.3; and Fe_2O_3, 3.3%) could be beneficiated by subjecting the sample to batch flotation tests followed by cleaning of the rougher concentrate after grinding and employing oleic acid emulsion as collector and a combination of sodium silicate and *katha* (tannin extract) as depressant for silicious and calcitic gangue. The coarsed grained veinous variety (CaF_2, 70.0; SiO_2, 24.0; $CaCO_3$, 1.5; Al_2O_3, 0.40; S, 0.20 & Fe_2O_3, 2.10%) could be beneficiated to satisfactory grade by subjecting the ore to gravity separation to get a coarse size concentrate and employing (i) heavy media separation and flotation, (ii) jigging and flotation, or (iii) direct flotation. The recovery of fluorspar varied from 86.3 to 93.7 per cent depending on the method.

The beneficiated flourspar was found suitable for use in acid and metallurgical industries.

CRRI, NEW DELHI

Origin and Destination Traffic Survey—A comprehensive traffic and transportation survey of the Bangalore metropolitan area is being carried out by the Institute at the instance of the Mysore Government. The object of the survey is to relieve congestion in the metropolitan area and to plan improved as well as new facilities to cater to the needs of the present and future traffic. Field work for origin-destination survey has been completed.

For carrying out the survey, two cordon lines were drawn on the Bangalore road map and traffic interview stations were selected wherever the cordon lines intercepted important roads. Altogether 60 survey stations were selected and roadside interviews of about 2 lakhs of road users were conducted to collect data on their origin, destination, frequency, purpose, occupation and income. The data thus collected are being processed.

NAL, BANGALORE

Vortex Flow Tunnel—For studying the fundamental flow characteristics of swirling fluids in a cylindrical duct, the effect of swirl in turbulent flow, growth of three-dimensional boundary layer along the duct and stability of flows in the presence of vortices, a vortex flow funnel has been fabricated and erected. It consists mainly of a vertical cylindrical duct, 6 ft high and 21 in. diam., made of Perspex. The flow of fluid in the duct is induced by a suction fan mounted at the top of the tunnel while a cascade of adjustable vanes at the bottom provides for a swirling airflow at any desired angle.

A mechanical device provides for pressure traversing at various cross-sections along the duct. The probes for measuring static and total pressures and the claw probes for detecting the direction of velocity of fluid have also been fabricated.

Sponsored Research

Study of Style and Stigma in relation to Pollen Tube Growth—The anatomy of gynoecium has been investigated in *Aloe*, *Amaryllis*, *Cyrtanthus*, *Nothoscordum*, *Ophiopogon*, *Polygonatum*, *Smilacina*, *Trillium* and *Tulbaghia*. The gynoecium is tricarpellary and the stylar branches are either free (*Trillium*) or fused up to various levels. The stigmatic papillae are mostly unicellular and club-shaped, but they are 2- or 3-celled in *Cyrtanthus*.

The transmitting tissue in the stigma region comprises a single layer of cells in *Aloe*, *Polygonatum*, *Smilacina*, *Trillium* and *Tulbaghia*; two layers in *Cyrtanthus*, and several layers in *Amaryllis* and *Nothoscordum*. Three tracts of transmitting tissue differentiate in *Ophiopogon* in the region of fusion of the three carpellary margins.

The style is hollow with a triangular stylar canal in *Aloe*, *Amaryllis*, *Cyrtanthus*, *Ophiopogon*, *Polygonatum* and *Smilacina* and solid in *Nothoscordum*. The style of *Tulbaghia* also appears solid due to prolific elongation of the cells of the ventral epidermis of the carpels. These extensions thus completely obliterate the stylar canal and give the appearance of solid style.

NAL, Bangalore—Vortex Flow Tunnel fabricated at the Laboratory

In *Aloe* the stigmatic papillae, outer epidermis of style and cells of the transmitting tissue in the upper portion of style are covered with a prominent lamellate cuticle. At the time of pollination the stigmatic papillae become covered with mucilage which seems to arise from the layers below the cuticle. A cuticle also covers the cells of the transmitting tissue in the upper one-fifth length of the style. The dissociation of transmitting tissue starts long before pollination, and mucilage arises from not only the dissolution of middle lamellae of the transmitting tissue but also the underlying layers. Some cells of the transmitting tissue become loose and lie free in the mucilage which fills the stylar canal. Likewise, the papillate cells of the placental epidermis also secrete mucilage.

Pollen tubes have been observed in the styles of all the plants investigated, excepting *Ophiopogon* and *Tulbaghia*.

The families, Liliaceae ond Amaryllidaceae, are well known for incompatibility and low seed-setting.

The growth of tubes in the hollow styles is ectotropic, but is endotropic in *Nothoscordum*. In the latter plant the tubes do not grow beyond the upper half of the style and the embryos are of nucellar origin; pollination appears to be essential for the development of adventive embryos.

Dr Zaheer's tour of Europe and U.K.

Dr S. Husain Zaheer, Director-General of Scientific & Industrial Research and *ex officio* Secretary to Ministry of Education, Government of India, will leave for Frankfurt on June 17, 1964 to participate in the European Convention of Chemical Engineering 1964 to be held during June 19-27, 1964. After the conference, Dr Zaheer will go to U.K. where he will meet Indian scientists and science students, will have discussions with the Department of Scientific and Industrial Research, and will visit London and Oxford.

Dr Zaheer will stay in Paris for about a week and visit the French Institute of Petroleum which is collaborating with the Council of Scientific & Industrial Research in setting up the Indian Institute of Petroleum.

The Director-General will also visit Czechoslovakia as a guest of the Czechoslovakian Academy of Sciences.

STAFF NEWS

Appointments

SHRI P.V. PAWAR—Senior Scientific Officer ; Grade II, CBRI, Roorkee (May 8, 1964).

DR M.P. REDDY—Senior Scientific Officer : Grade II, NCL, Poona (March 12, 1964).

SHRI VIJAYAWARGIA—Civil Engineer, CSIR Secretariat, New Delhi (April 30, 1964).

Promotions

SARVASHRI Z. GEORGE, N.C. MAJUMDAR & T. N. GUPTA, Junior Scientific Officers—Senior Scientific Officers : Grade II, CBRI, Roorkee (May 8, 1964).

SHRI K.A. SUNDARARAJAN—Stores Officer, CECRI, Karaikudi (March 28, 1964).

SARVASHRI S.P. MUKHERJEE, A.D. DESHPANDE, D.S. BENDALE & DR R.M. JOSHI—Senior Scientific Officers : Grade II, NCL, Poona (April 1, 1964).

* * *

SHRI SHIV KUMAR KUNDRA, Junior Scientific Officer, NCL, Poona, has been awarded the Ph. D. degree of the Panjab University for his thesis : *Studies on the separation of some light lanthanons from Indian monazite.*

Prime Minister's House, New Delhi—Mourning women and children saying 'namaste' to their departed leader just before the body of late Jawaharlal Nehru was taken out on May 28, 1964, on its last journey

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CSIR NEWS

VOL. 14 JUNE 22, 1964 : ASADH 1, 1886 No. 12

Modern Advancement in Mining

A two-week summer school on Modern Advancement in Mining is being held at the Central Mining Research Station from June 9, 1964. As many as 27 mining engineers, professors and scientists are taking part in the school.

Dr S. H. Zaheer

Dr S.H. Zaheer, Director-General, Scientific and Industrial Research, has been nominated a member of the Central Advisory Board of Education for a period of three years ending March 31, 1966.

Dr K. N. Sinha

Dr K.N. Sinha, Officer on Special Duty, Central Mining Research Station, Dhanbad, has been appointed Director of the Station with effect from May 15, 1964.

Shri Sinha (*b.* 1916) took the B.Sc. degree of the Patna University in 1935 and first class diploma in Mining Engineering of the Indian School of Mines, Dhanbad in 1939. He obtained the Mine Surveyor's Certificate of Competency in 1940 and First Class Mine Manager's Certificate of Competency in 1942.

In 1940, he served as Secretary of the Coal Industry Reorganisation Committee of Bihar State. He worked as Mining Engineer and First Class Mine Manager in the Jharia Coalfield during 1942-46.

He was awarded the Ph.D. degree in Mining by the Leeds University in 1949. During his stay at the University, Dr Sinha visited a large number of European mines to carry out his investigations.

After working as Mining Research Engineer in the mining industry for over ten years, Dr Sinha joined the Central Mining Research Station in 1960 as Officer on Special Duty, delegated with powers of director. He has taken keen interest in initiating research projects of immediate need to the mining industry of the country and providing technical information services to the industry.

Dr Sinha has published over fifty research papers in Indian and foreign journals on various subjects, like stowing, mine working, strata control, mine fire, mining research, underground gassification. He has received several awards, medals and prizes in India and abroad for his research work.

He attended the International Conference of Directors of Mining Research Institutes in Poland in 1961 and the Third International Mining Congress in Austria in 1963. He also acted as the chairman of one of the Technical Sessions of the Congress.

Dr Sinha has been the President of the National Association of Colliery Managers (India) and Vice-President of the Mining, Geological and Metallurgical Institute of India and Indian Mine Manager's Association. He is a member of the Institution of Mining Engineers, London.

Dr H.L. Uppal

Dr H.L. Uppal, Assistant Director, Central Road Research Institute, New Delhi, has been appointed (on merit promotion) Deputy Director in the Institute, with effect from April 2, 1964.

Born on March 4, 1914 at Mardan (North-West Frontier Province), Shri Uppal had his college education (1931-35) at the Forman Christian College, Lahore from where he obtained the B.Sc. (Hons) Tech.

(*Contd on p. 3 col. 1*)

STAFF NEWS

Appointments

DR J. MUKHERJEE—Senior Scientific Officer : Grade I, CGCRI, Calcutta (May 19, 1964).

SHRI V. SIVANANDA—Pool Officer, NAL, Bangalore (June 1, 1964).

Promotions

DR S.P. POPLI, Senior Scientific Officer : Grade II—Senior Scientific Officer : Grade I, CDRI, Lucknow (Feb. 12, 1964).

SARVASHRI B. K. AGARWAL & S.V. BHATYE—Senior Scientific Officers : Grade I, CGCRI, Calcutta (April 29 1964).

DRS PRABHU NATH, J. PRASAD & SHRI S.K. GUHA—Senior Scientific Officers : Grade II, CGCRI, Calcutta (April 29, 1964).

SHRI V.K. VAISH—Senior Scientific Officer : Grade I, CGCRI, Calcutta (May 19, 1964).

SHRI B.N. KAUL NAZIR, Documentation Officer—Senior Scientific Officer : Grade II, RRL, Jammu (May 21, 1964).

DR C.L. MADAN, Senior Scientific Officer : Grade II, CDRI, Lucknow—Senior Scientific Officer : Grade I, RRL, Jammu (May 21, 1964).

SHRI V.N. VASHISHT, Senior Scientific Officer : Grade II, RRL, Jammu (May 21, 1964).

SHRI M.A. HAQ, Electrical Overseer—Assistant Electrical Engineer, CSIR Secretariat, New Delhi (May 29, 1964).

* * *

DR ATMA RAM, Director, CGCRI, Calcutta, has been elected Vice-President of the Indian Science News Association for 1964-65.

SHRI S.S. Verma, Assistant Director, CGCRI, Calcutta, returned from Canada on May 25, 1964 after completion of this training in 'Heat and chemical resistant vitreous enamels' under the Colombo Plan.

(*Contd on p. 2, col. 2*)

B R I E F S

CBRI Annual Report

The Annual Report of the Central Building Research Institute, Roorkee for 1963-64 has been published. Beginning with an introduction which highlights the main achievements of the Institute, the report (Royal 8 vo, pp ix+62) summarises the research contributions under the seven main divisions : Building materials, Soil engineering, Design and performance of structures, Efficiency of buildings, Building process, plant and productivity, Architecture, and Information & survey. Also included in the report are seven appendices relating to lectures, colloquia, research and review papers, visitors, etc.

Low Temperature Carbonization

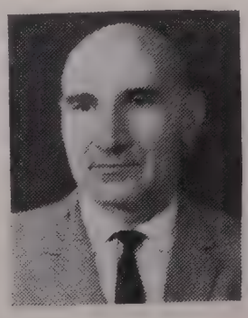
The second volume of the proceedings of the symposium on Low Temperature Carbonization of Noncaking Coals and Lignites and Briquetting of Coal Fines, held at the Regional Research Laboratory, Hyderabad in November 1961 has been published by the Publications & Information Directorate. This volume (Royal 8 vo ; pp. 349, Price Rs 35) contains thirty-eight papers under the sections, Products of Low Temperature Carbonization (32 papers) and Survey, Economics and Statistics of l.t.c. Products (6 papers) besides general discussion in each section and an author index.

Inter-firm Comparison of Costs and Profits

This is the title of the report (pp 49) brought out by the South India Textile Research Association (SITRA), Coimbatore in March 1964. Compiled by K. Ranganathan and N.R. Rajeswaran, the report is based on a study of 59 member mills of the Association for the year 1961, and presents an analysis and comparison of the various factors that affect the return and profitability. The results are expressed in the form of a few ratios such as assets per spindle, profit per spindle, sale value of material produced per spindle and margin of profit over sales, etc. The report also discusses the effect of average count, proportion of cone winding, productivity, age of the mill, etc. on the return on assets and profitability.

Prof. Sh. Karapetyan

Dr Sh. A. Karapetyan, Deputy Director of Telomerization Project, U. S. S. R., joined the National Chemical Laboratory, Poona on March 9, 1964 under the Indo-Soviet Cultural Exchange Programme 1963-64. An expert on the telomerization of ethylene with carbon tetrachloride, Dr Karapetyan will advice, during his six months' stay at the Laboratory, on the installation and use of the high-pressure autoclave and continuous pilot plant for telomerization. He will also visit some essential oil factories and research laboratories in India.



Dr Karapetyan is a graduate in Chemical Technology (1938), Ph. D. in Technical Sciences (1946) and possesses State Diploma for SSO(I) in Chemical Engineering (1949). During 1938-53, he worked in several research laboratories on essential oils, synthetic drugs, etc. Since 1953 he has been working in the Institute of Elemento-Organic Chemistry of the Academy of Sciences, Moscow.

Dr Karapetyan has been responsible for establishing several pilot and industrial plants. He has published about 40 papers on the technological aspect of organic chemistry.

STAFF NEWS

(*Contd from p. 1, col. 3*)

Nominations : General

SHRI S. K. CHOPRA, Senior Scientific Officer : Grade I, CBRI, Roorkee, has been nominated a member of the Building Material Development Promotion Committee of the National Buildings Organization.

DR Y. V. G. ACHARYA, Assistant Director, NAL, Bangalore, has been nominated a member of the Steering Committee for Development of a two-seater Gyroplane, Department of Engineering (R & D), Ministry of Defence.

Nominations : ISI

SHRI R. M. KRISHNAN, Assistant Director, NML, Jamshedpur—member, Cement Sub-Committee.

DR RAM PRASHAD, Assistant Director, NPL, New Delhi—member, Semi-conductor Devices Sub-Committee.

SHRI M. R. VERMA, Assistant Director, NPL, New Delhi—member, Sampling and Methods of Test Sub-Committee.

SHRI T. D. BANSAL, Senior Scientific Officer, NPL, New Delhi—member, Industrial Instruments Sectional Committee.

SHRI R. K. DUBEY, Senior Scientific Officer : Grade II, NML, Jamshedpur—member, Sectional Committee for Oil Expellers and Allied Oil Mill Machinery.

DR B. K. AGARWALA, Senior Scientific Officer : Grade I, NPL, New Delhi—member, Methods of Physical Test Sectional Committee.

SARVASHRI S. N. NAIK, S. NAGABHUSHANA & M. SURENDRAIAH, Senior Scientific Officers: Grade II, NAL, Bangalore, left on May 1, 1964 for the National Aeronautical Establishment, Canada, under the Colombo Plan for 9 months' training in blowdown wind tunnel design, operation, calibration and testing techniques ; instrumentation and data handling ; and wind tunnel laboratory and model shop techniques respectively.

Prof. K. Venkataraman

Prof. K. Venkataraman, Director, National Chemical Laboratory, Poona, returned to Poona on May 10, 1964 after a month's visit to Japan in the course of which he attended the International Symposium on the Chemistry of Natural Products in Kyoto and the Symposium on the Chemistry of Microbial Products in Tokyo. He gave lectures on synthetic dyes in the University of Tokyo under the auspices of the Society of Organic Synthetic Chemistry of Japan and Japan Dyestuff Industrial Association, and in the research departments of Mitsubishi Chemical Co. and Mitsui Chemical Company. He also visited the laboratories and the plants of several pharmaceutical and dyestuff firms, the Dyes Division of the Institute of Industrial Science in the University of Tokyo, the Dyes and Textiles Chemical Divisions of the Tokyo Institute of Technology, and the Institute of Government Industrial Research in Tokyo.

RESEARCH PROGRESS

National Laboratories

NAL, BANGALORE

Transistorized Multiplexer—When a large number of analog data are to be logged and recorded, it is economical to have one recording medium which can register the channel outputs in a sequence. A multiplexer or scanner which sequentially switches the analog signal to be measured to the recorder is ideal for this purpose. Such a multiplexer unit is particularly useful in wind tunnel data acquisition systems where a variety of transducers such as strain gauges, differential transformer type pressure pick-ups, thermocouples are encountered. The switching speed should necessarily be much faster than the recording rate.

A transistorized multiplexer for scanning four analog data inputs has been developed. The scanning rate can be varied from 3 millisec. to 3 sec. in five fixed interval steps. The equipment can handle input signals of amplitude 0 to 1.5 volts r.m.s. The maximum noise level is 2 millivolts. The number of channels can be increased to 16 or 32, the limiting factor being the speed at which the scanned analog data can be recorded or digitized, stored and punched. Being transistorized, the instrument is compact, stable in operation and consumes very low power.

Sponsored Research

ESR Study of Crystalline Compounds—The electron spin resonance (ESR) of ethylenediamine (en) complexes of copper (II) sulphate, viz. $CuenSO_4 . 3H_2O$, $Cu(en)_2SO_4 2H_2O$ and $Cu(en)_3SO_4$, was investigated at 3 cm. and at room temperature. The powder spectrum of the first two complexes showed asymmetric line shape from which the g values parallel and normal to the tetragonal axis were deduced. Study of single crystals of $Cu(en)_3SO_4$ indicated that they crystallize in hexagonal system with two molecules in the unit cell. However, the Cu^{2+} ion is surrounded octahedrally by six nitrogen atoms belonging to the three ethylenediamine molecules. The octahedron is almost perfect so that at room temperature no anisotropy in g is observed. This unusual spectrum due to the trigonal symmetry of the $[Cu(en)_3]^2$ complex was compared with the spectra of other similar crystals like cupric bromate $Cu(BrO_3)_2 . 6HO_2$. The bonding between copper and nitrogen was highly covalent as deduced from the correlation of the g values with optical absorption data. Single crystal ESR study of $Cu(en)_2Br_2.H_2O$ made at room temperature showed that the structure was in fair agreement with the X-ray data in literature. In all these complexes the exchange frequency, Curie temperature and the contribution of the exchange interaction to the specific heat were deduced from experimental line width—T. RAMASUBBA REDDY, R. RAJAN & R.S. KRISHNAN, Indian Institute of Science, Bangalore.

Titanium, Zirconium, Thorium and Uranium Complexes—Antipyrine (A) complexes of metals of IV A group and uranyl perchlorate having the composition $TiOA_4(ClO_4)_2$, $ZrOA_3(ClO_4)_2$, $ZrA_5(ClO_4)_4$, $ThA_7(ClO_4)_4$ and $UO_2A_5(ClO_4)_2$, were prepared and their physicochemical properties investigated. Infrared studies indicate that the bonding between metal and antipyrine takes place by the donation of a lone pair of p-electrons of oxygen to the metal. Electronic absorption studies show that the central atom is polarised in the following order in the complex: $UO_2^{2+} < Th^{4+} < ZrO^{2+} < Zr^{4+} < TiO^{2+}$. The explosion temperatures for TiO^{2+}, ZrO^{2+}, Zr^{4+}, Th^{4+} and UO_2^{2+} complexes were found to be 258°, 307°, 313°, 356° and 319°C. respectively.

Pyridine N-oxide complexes of zirconyl, thorium and uranyl perchlorates having the composition $ZrO(Py.O)_6.(ClO_4)_2$, $Th(Py.O)_8.(ClO_4)_4$ and $UO_2(Py.O)_5.(ClO_4)_2$ have been prepared. Infrared and electronic absorption spectra reveal that the bonding between the metal and Py.O in the complexes takes place by donation of a pair of p electrons of oxygen to the metal. The π-bond character of NO group decreases in the order $ZrO^{2+} > Th^{4+} > UO_2^{2+}$. The decomposition temperatures of zirconyl, thorium and uranyl complexes have been found to be 307, 350 and 319°C. respectively—P. RAMA MURTHY, Indian Institute of Science, Bangalore.

Potassium Release in Soils—The study of effect of moisture and temperature on the release of potassium was taken up as recent field trials on the application of potassium to soils have shown increased crop yields especially in sandy, sandy loam, lateritic and other highly leached soils. Using twenty-nine surface soil samples (0-6 in.) selected from different soil groups in India, the capacity for release of potassium was studied at three moisture levels (water-holding capacity, half water-holding capacity and air dry) and at two temperatures (35° and 45°C.). The study revealed that the maximum release of potassium was obtained at 35°C. and half water-holding capacity. The release of potassium increased when the soil incubated at different moisture and temperature levels was air-dried at room temperature—N.P. DATTA & A.R. KALBANDE, Indian Agricultural Research Institute, Delhi.

Research Papers

PARIMALA, (MRS) JOSE, PANT, L.M. & BISWAS, A.B. (NCL, Poona) —**The crystal structure of nickel alanine dihydrate**. *Acta cryst., Camb.*, **17** (1964) 24.

TAVALE, S.S., PANT, L.M. & BISWAS, A.B. (NCL, Poona)—**The crystal and molecular structure of sodium 2-oxocaprylate**. *Acta cryst., Camb.*, **17** (1964), 215.

PANT, L.M. (NCL, Poona)—**One dimensional disorder in the structure of sodium 2-oxocaprylate**. *Acta cryst., Camb.*, **17** (1964), 219.

NAGASAMPAGI, B.A., PANDEY, P.C., PANSARE, V.S., PRAHLAD, J.R. & SUKH DEV (NCL, Poona)—**Identification of methylnaphthalenes by PMR : Some useful rules**. *Tetrahedron Lett.*, No. 8, (1964), 411.

NARAYANAN, C.R., PACHAPURKAR, R.V., PRADHAN, S.K. & SHAH, V.R. (NCL, Poona)—**Stereochemistry of nimbin**. *Chem. & Ind.*, No. 8 (1964), 324.

MIRCHANDANI, H.V., SRIVASTAVA, B. C. & SIDDIQUI, S. A. (CBRI, Roorkee)—**Performance trials on a mechanical hoist**. *Indian Build.*, **12** (5) (1964), 75.

RAMASWAMY, G.S., RAMAIAH, M. & BALLAL. B. Y. (CBRI, Roorkee)—**Matric methods in structural analysis:** Part IV. *Indian Concr. J.*, 38 (1964), 148.

BALACHANDRAN, C. G. & KRISHNAN, P. V. (CBRI, Roorkee) **Studies on diffusion of sound in a reverberation chamber.** *Acustica*, 14 (1964) 114.

JAIN, L. C., JAIN, P.C. & HIRALAL, E. S. (CBRI, Roorkee)—**Use of maganese ore in the manufacture of of coloured bricks.** *Indian Ceram.*, 10 (1964), 317.

Dr Uppal

(*Contd. from p. 1, col. 2*)

and M.Sc. (Hons) degrees. After obtaining in 1942 the Ph.D. degree in soil science, Dr Uppal started his career in 1944 as Research Officer at the Buildings & Roads Research Laboratory, Punjab where he served till 1950. His services were taken over by the Central Road Research Institute where he was appointed Assistant Director (Soils). During 1955, he was deputed under the Colombo Plan to U.K. and Europe for study of road problems.

Dr Uppal has about 30 years' research experience in fundamental and applied soil mechanics, with special reference to soil stabilization and is a pioneer in this field. Some of his laboratory researches have led to important field applications having far reaching importance on the economy of construction, as for example the use of soil as an alternative cheaper material of construction in big engineering projects. He has contributed about 50 research papers on soil engineering.

During his services with the Punjab Public Works Department, he applied the results of the laboratory research to the construction of 4,000 soil-cement houses, and was responsible for the quality control of the entire project through a chain of 20 field laboratories. He has also been responsible for the construction of a few hundred miles of stabilized soil roads in different parts of the country.

He is the recipient of the Indian Roads Congress Medal for the paper entitled 'The importance of subgrade compaction in the economic design of flexible pavement'. He was also awarded commendation certificate for his paper entitled 'An investigation for evaluating an airfield payment'.

Dr Uppal is the Secretary of the Central Assessment Committee, constituted by the Government of India, to make recommendations to the various States on the use of new techniques of road construction evolved as a result of research. He is also the Convener of soil engineering committees of the Council of Scientific & Industrial Research, Indian Standards Institution, Indian Roads Congress and Indian National Society of Soil Mechanics & Foundation Engineering.

PATENTS

Filed

93147 : *Improvements in or relating to the easy removal of synthetic enamel from enamel coated copper wires*—K. Raman, Indian Institute of Technology, Kanpur.

93481 : *A process for the preparation of motor spirit, diesel oils and kerosene-substitutes from primary coal tar fractions*—(Mrs) Aziz Mirza, Mohammad Aziz Masood, A.V. Ramaswamy, Shaik Abdul Qader & R. Vaidyeswaran, RRL, Hyderabad.

93482 : *A process relating to improvements in or to the manufacture of inks used for job printing, off-set printing, stencilling, finger printing or like purposes*—M. R. Verma, V.D. Puri & Jitendra Rai, NPL, New Delhi.

92113 : *Improvements in or relating to bituminous binders or aggregates having anti-stripping properties for road and building construction works*—S. Bagchee, CRRI, New Delhi.

92273 : *A process for vacuum-puffing and dehydration of vegetables*—K.E. Eapen, CFTRI, Mysore.

92276 : *A process for the production of puffed cereals*—K.E. Eapen, CFTRI, Mysore.

93681 : *Production of black coatings of copper by s-anodisation*—R.L. Seth, P.N. Narayanan Naboodiri & P.B. Mathur, CECRI, Karaikudi.

99/303 (*Italy*): 298691 (*Spain*): 15546/64 (*Japan*); *Processing of dry ready-to-wet, sausage casings from cattle, goat, sheep, pig and other mammalian intestines*—S.K. Barat, CLRI, Madras.

Sealed

79211 : *A method for the production of superior grade (smoke point above 20 mm.) of kerosene and aviation turbine fuels from high aromatic content (above 40%) middle distillates of crude oil*—S.K. Bose, A.K. Ganguli, A.N. Basu, N.G. Basak & A. Lahiri, CFRI, Jealgora.

79388 : *A process for the manufacture of a bloated clay aggregate designated (by us) as 'Gaylite', from the silt deposited by the river Hooghly*—S.K. Chopra & Kishan Lal, CBRI, Roorkee.

Dr N. U. Rao

Dr N. Umamahesh Rao, Senior Scientific Officer : Grade I, Central Public Health Engineering Research Institute, Nagpur, has been appointed on promotion Assistant Director in the Institute with effect from May 5, 1964.

Shri N.U. Rao (*b.* Oct. 15, 1924 at Perukalapudi, Andhra Pradesh) took the B. Sc. degree from the Banaras Hindu University in 1946. After working as a chemist in K.C.P. Distilleries at Vuyyuru, Andhra Pradesh for about a year, Shri Rao proceeded to U.S.A. for higher studies. He obtained the M.S. (1949) and Ph. D. (1952) degrees in microbiology from the University of Illinois. He was a research scholar in the Microbiology Department of the University during 1949-50. In 1951-52, he worked as a chemist-cum-bacteriologist at the Illinois State Water Survey, Champaign.

During 1952-55, Dr Rao worked with Prof. Earle H. Spaulding at the Department of Microbiology, Temple University School of Medicine, Philadelphia on intestinal antisepsis. Simultaneously he taught medical microbiology to undergraduate and post-graduate classes.

On his return to India in 1955, he was appointed Professor of Bacteriology at the Guntur Medical College. During 1960-61, Dr Rao worked as a senior research fellow at the Central Leather Research Institute, Madras and was appointed Senior Scientific Officer : Grade I, at CPHERI in March 1961.

Dr Rao has twenty research papers to his credit and is the author of 'Manual for Medical Microbiology'. He is a member of the American Society for Microbiology, Sigma Xi, Phi Sigma, Phi Kappa Epsilon, and a number of learned scientific societies in India.

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CSIR NEWS

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SCIENCE AND THE NATION

A four-day symposium on 'Science and the Nation during the Third Five-Year Plan' is being organized by the Association of Scientific Workers of India at Vigyan Bhawan, New Delhi during the last week of July 1964.

The symposium will be held under the following eight sessions : (i) Science in irrigation and power including atomic energy ; (ii) Science in food and agriculture ; (iii) Science in steel, mines, fuel, heavy engineering and other key industries ; (iv) Science in chemicals and petroleum ; (v) Science in transport and communications ; (vi) Science in health, building and town planning ; (vii) Planning and financing of science, organization of scientific research and training of scientists ; and (viii) Science and international relations.

Over 150 delegates nominated from several Central Government Ministries, Planning Commission, Atomic Energy Commission, Directorate-General of Technical Development, CSIR institutions, public undertakings, universities and several research institutions will take part in the symposium. As many as 90 papers are expected to be submitted for presentation and discussion.

An important feature of the symposium is the participation of observers and scientists from Afro-Asian countries. Over 40 scientists from these countries are expected to attend. In this connection, the Association of Scientific Workers of India had sent Prof. S.K. Mukerji (Kalyani University) to tour African countries, Dr C.R. Krishnamurthy (CDRI, Lucknow) to South and South East Asian countries, Shri A.K. Bose (CSIR, New Delhi) to Nepal and Shri A. Rahman (CSIR, New Delhi) to Afghanistan, Iran, West Asian and North African countries, with a view to contact the scientists and to request them to send their representatives to the symposium. In the course of their tour, they inculcated a keen desire amongst the foreign scientists to collaborate and develop scientific relations with India.

The foreign delegates are expected to go round some of the national laboratories, research institutions and industrial establishments, to have on the spot information regarding the development of science and human relations since independence. After their tour, a preparatory committee is to be set up to plan for the symposium in 1965 for working out ways and means by which developing countries can collaborate amongst themselves for the promotion of science and technology.

Documentation & Reprography Course

Insdoc will be starting a one-year training course in documentation and reprography from August 1964 with a view to meeting the great demand for suitably trained persons in documentation, translation and reprography resulting from the increasing tempo of research and industrial activity in the country. The training will be at the post-graduate level and the trainees will be restricted to fifteen in number at a time. Admission to the course will be normally restricted to candidates possessing at least a second class Master's degree. Successful candidates will be awarded Diplomas.

Dr K. Ganapathi

Dr Krishnamurthi Ganapathi, Assistant Director, Haffkine Institute, Bombay, has been appointed Director of the Regional Research Laboratory, Jammu with effect from June 1, 1964.

Born on August 18, 1911 in Tanjore dist. (Madras State), Shri Ganapathi received his early education in Madras State and after a brilliant academic record obtained the M.Sc. degree in organic chemistry from the Annamalai University. During 1934-39 he carried out research on 'Terpenes and the chemotherapy of tuberculosis' at the Indian Institute of Science, Bangalore, leading to the D.Sc. degree of the Madras University. Subsequently as a Lady Tata research scholar (1936-39) he worked on the chemotherapy of bacterial infections, particularly on the synthetic drugs of the sulpha group.

Dr Ganapathi joined the Haffkine Institute, Bombay in 1939 and built up the Department of Chemotherapy. His special fields of study in the Institute included the synthesis and testing of sulpha drugs, antimalarials and biochemistry of antibiotics.

During 1944-48, Dr Ganapathi worked on the production of penicillin on a laboratory scale and was responsible for the drawing up of plans and proposals for the establishment of a national penicillin production centre which later came up as the Indian Penicillin Factory at Pimpri. In 1953, he joined, on deputation from the Bombay Government, the Hindustan Antibiotics Ltd, Pimpri as Director of Research and was responsible for the planning and setting up of its research laboratory. In 1958, he was Works Manager of the factory. He rejoined the Haffkine Institute as Assistant Director in 1959 and was engaged on chemical-microbiological studies.

Dr Ganapathi has been keenly associated with the scientific workers movement in the country since its inception and has served in various capacities in furthering the movement through the Association of Scientific Workers of India. Dr Ganapathi was elected a Fellow of the National Institute of Sciences of India in 1946 and of the Indian Academy of Sciences in 1951. He has published over 100 research papers and has 15 patents to his credit.

B R I E F S

Indian Journal of Biochemistry

The Publications & Information Directorate has added this new journal to the family of research periodicals issued by the Directorate, thus meeting the long-felt need of biochemists in the country. The new journal, published quarterly, is devoted to original research communications in the field of biochemistry and replaces the *Annals of Biochemistry & Experimental Medicine*, previously issued from the Indian Institute for Biochemistry & Experimental Medicine, Calcutta.

Notable among the papers appearing in the first number (March 1964) are: Studies on intestinal transaminases with special reference to human intestinal glutamic-aspartic transaminase; Studies on ubiquinone saturated in the side chain; Enzymatic synthesis of RNA & its role in protein synthesis; Biosynthesis of long-chain fatty acids by cell-free preparations of *Mycobacterium* 607; Effect of biotin on cholesterol synthesis; Metabolism of *Pasteurella pestis;* Observations on swelling of rat liver microsomes in barbital buffer; Studies on ethanolamine containing phosphatides of *Mycobacteria;* Studies on a bacteriolytic enzyme from the latex of *Ervatamia coronaria;* Metabolic relationship between dietary protein and iron; and Fatty acid composition of human bile lipids.

History of Road Development in India

The Central Road Research Institute, New Delhi has brought out a publication entitled 'History of Road Development in India'. The publication (Crown 4 to, Pp. vi+115), comprising two parts, traces the genesis of the Indian road system in the times immemorial and surveys its chequered history through the subsequent ages. Part I portrays the road system as evolved in ancient India and further developments made in the medieval times. Viewing the roads from a technical angle, this part also discusses at length the scientific characteristics of the ancient roads, the regulation of traffic on them, and the linear measure scale for roads practised in the past. Part II picks up the narration from the times of the early British rule and highlights the trends in modern India; it also critically analyses the progress made during the last two hundred years and makes an appraisal of the present road system. Besides a selected bibliography on the topic, there are eight appendices dealing with up-to-date statistical data and other factual information frequently required for reference.

Salt and By-Products

A two-day seminar on Salt and By-products organized by the Central Salt and Marine Chemicals Research Institute, Bhavnagar (*CSIR News*, Vol. 14, No. 9, p. 2) was inaugurated by Shri Balwantray Mehta, Chief Minister of Gujarat on April 10, 1964. One hundred and thirty-three papers received from technologists, salt manufacturers and scientists from India and abroad were presented and discussed in five technical sessions: (i) Salt engineering, (ii) Salt of different grades, (iii) Desalination of sea water, (iv) Marine chemicals—potassium, magnesium and calcium chemicals, and (v) Analytical aspects and problems of salt and by-product industries.

In the light of views expressed at the seminar, Dr D.S. Datar of the Institute indicated in the concluding session the future lines of research and development at the Institute with regard to salt and by-product industries.

Doctorate Awards

SHRI J. BHATTACHARYYA, Senior Research Fellow, IIBEM, Calcutta—D. Phil. Sc. (Calcutta University); thesis: *Studies on some alkaloids, triterpenes and steroids from Indian medicinal plants.*

SHRI A. DUTTA, Senior Scientific Assistant, IIBEM, Calcutta—D. Phil. Sc. (Calcutta University); thesis: *Physiological and pharmacological studies on active principles of* Alangium lamarckii *Thw.*

SHRI B.K. NATH, Junior Scientific Officer, IIBEM, Calcutta—D. Phil. Sc. (Calcutta University); thesis: *The assessment of optical system suffering from aberrations.*

SHRI M.K. RASTOGI, Senior Scientific Assistant, CDRI, Lucknow—Ph. D. (Lucknow University); thesis: *Studies on protein supplements and their biological evaluation.*

Scientific Officers' Designation

In pursuance of the Board of Scientific and Industrial Research and the Governing Body of CSIR Decisions (*CSIR News*, Vol. 14, No. 7, p. 1), an Office Memorandum dated June 12, 1964 has been issued by the CSIR Secretariat. According to the Memorandum, all scientific staff, except the Director, entering in future into CSIR services, will be appointed to only the following four grades: *Scientist B* (Rs 400-40-800-50-950), *Scientist C* (Rs 700-50-1250), *Scientist E* (Rs 1300-60-1600) and *Scientist F* (Rs 1600-100-1900); the other old grades will be retained for the existing staff until such time as they are suitably absorbed.

In accordance with the revision, the present and the new designations of the various scientific/technical officers will be as follow: Junior Technical Officer—*Scientist A 1*; Junior Scientific Officer—*Scientist A*; Senior Technical Officer: Grade II—*Scientist B 1*; Senior Scientific Officer: Grade II—*Scientist B*; Senior Technical Officer: Grade I—*Scientist C 1*; Senior Scientific Officer: Grade I—*Scientist C*; Assistant Director—*Scientist D* (Rs 1100-50-1500); Assistant Director—*Scientist E* (Rs 1300-60-1600); Deputy Director—*Scientist F.*

All scientific/technical officers engaged in the dissemination of scientific information and industrial liasion will also be considered as *Scientists* and will be appropriately placed in the Scientists' Grades A, B, C and E.

The *CSIR News* will adopt the new designations from the next issue onwards.

Upgrading of Senior Scientific Assistants

A circular letter dated June 15, 1964 issued by the Secretary, CSIR in pursuance of the decisions of the Board of Scientific and Industrial Research and the Governing Body of CSIR relates to the upgrading of scientific and technical assistants. The letter notifies that the cases of upgrading of senior scientific/technical assistants who have completed five years in their present positions may be reviewed by a committee consisting of the Director-General, Scientific and Industrial Research, Director of the laboratory/institute, Financial Adviser to CSIR and one or two experts for each laboratory.

RESEARCH PROGRESS

National Laboratories

CBRI, ROORKEE

Weighting Function and Transient Thermal Response of Buildings—A theoretical investigation of transient thermal response of buildings when the outdoor temperature and solar radiation follow any arbitrary function has been carried out. The investigation deals with heat transfer in enclosures whose bounding walls are assumed to be homogeneous in construction, as well as with enclosures of composite construction. In the latter case a three-layered wall has been considered in a general way and solutions for cavity wall and insulated walls with cladding of external or internal insulation are obtained as special cases.

The theory of heat transfer in buildings has been developed on the concept of certain characteristic functions called weighting functions derived by solving the fundamental equations governing the transfer of heat in enclosures having ventilation and internal mass and subjected to unit pulse variation in outdoor temperature. The functions so obtained are characteristic of the thermal properties of the enclosures but independent of the outdoor climatic variations.

As an application of the theory, weighting functions for a number of traditional houses of known thermophysical properties have been computed for different internal masses and rates of ventilation. The thermal response of a building of any construction is obtained in two steps by the use of weighting functions and the energy equation. Firstly, any wall of the building is taken and its response obtained by coupling its weighting function with the outdoor temperatures and incident solar radiation. After individual responses of the bounding walls have been computed, these are combined through the energy equation to obtain thermal response of the building as a whole—N.K.D. CHOUDHURY & Z.U.A. WARSI.

Sponsored Research

Computing Techniques in X-ray Crystallography—A hybrid computer for X-ray crystallography has been completed. This is essentially a fixed program digital computer which uses analog techniques for function generation and is capable of calculating the structure factors. Several test runs were carried out and certain defects noticed were eliminated.

Detailed procedures for applying the computer to Triple Fourier synthesis, power series summation, etc. have been worked out. The theory for utilizing analog differential analyser techniques for the harmonic analysis of 2 or 3 dimensionally periodic functions also has been developed. One important application of the theory is in calculating two-dimensional structure factors directly using computers like X-RAC or Chithralekha. In these cases, only the addition of three operational amplifiers is required for calculating F_{kho}. An important advantage is that the electron density contour maps and the values (real and imaginary) of a number of F_{kho} can be simultaneously observed—S. HARIGOVINDAN & R.S. KRISHNAN, Indian Institute of Science, Bangalore.

Botanical Aspects of the Oceanography of Visakhapatnam Coast—Information on the composition of the algal flora, seasonal changes and vertical zonation of the algae growing in the intertidal region of the Visakhapatnam coast was gathered in the period May 1960-February 1964, along with the information on the seasonal changes in the intertidal environment.

Excluding diatoms and some crustose and lithyphytic algal forms, a total number of eighty forms were collected. Seventy-six algae have so far been identified and they include 10 genera with 21 species belonging to Chlorophyceae, 12 genera with 17 species to Phaeophyceae, 26 genera with 27 species to Rhodophyceae and one genus to Myxophyceae. Forty-three algae have also been confirmed by Prof. G.F. Papenfuss of California University, U.S.A. ; of these, 7 are new forms.

The seasonal and yearly changes in the growth of some common algae occurring in the intertidal region of the coast and their relationship to the changes observed in the environmental factors were studied. Among the different factors influencing the algal growth, the tidal behaviour associated with the seasonal changes in the mean sea levels and seasonal changes in the sand levels on the beach were found to be important in controlling the seasonal changes in the algal growth.

Distinct zonation in the vertical distribution of the different organisms occur in the intertidal region of the coast and the three zones observed on this coast correspond well with the three basic zones in the universal scheme of zonation proposed by Stephenson and Stephenson. The seasonal and yearly variations in the vertical distribution and band formation of some common algae growing in the different zones on this coast have also been studied.

The tidal behaviour on the coast was examined in detail and the seasonal changes, zonation and the yearly variations observed in the algal growth on the coast were found to be associated with the seasonal variations in the duration of exposure and submergence at the different levels on the shore.

Some experiments were conducted on four algae growing at different levels in the intertidal region by artificially exposing them to air, with a view to study the variations in their abilities to withstand different periods of exposure and to compare the experimental results with durations of exposure caused by the tides at different levels on the shore. A correlation was observed between the critical periods obtained from the experimental data on the mid-littoral and infralittoral fringe algae and the exposure values estimated for the particular levels on the shore from the tidal curves, indicating the importance of tides in determining the vertical distribution of the intertidal organisms—M. UMAMAHESHWARA RAO & T. SREERAMULU, Andhra University, Waltair.

Chloride Regulation in Animals—Migratory forms like eels, salmon and estuarine fish like *Fundulus heteroclitus* and fresh-water fishes like the Guppies and *Entroplus maculatus* show tolerance to wide

fluctuations in the salinity of the medium. The ability of these fishes to survive in hypertonic and hypotonic media depends on chloride regulatory mechanism. The investigation was undertaken with a view to find out whether *Tilapia Mossambica*, a fresh-water fish which survives in sea-water, regulates the chloride level of the blood and if so, to understand the mode of regulation. The study has shown that *T. mossambica* is an Euryhaline fish, possessing a mechanism for hyperregulation as well as hyporegulation of chlorides. It differs from the teleosts which are capable of such regulation in that it lacks the chloride cells in the gill filaments concerned with the absorption and excretion of chlorides. The respiratory epithelium in Tilapia, as in Crustaceans like *Artemia salina*, is perhaps capable of absorption and excretion of chlorides. The chlorides are possibly secreted along with the mucus. Chloride regulation may take place at tissue level—(Miss) T.V. VASANTHA, Madras University, Madras.

Research Papers

KOTHARI, M.S. & DORAISWAMY, L.K. (NCL, Poona)—Alternate method for vapour heat capacity. *Hydrocarbon Process. Pet. Ref.*, **43** (1964), 133.

PANCHOLY, M. & SINGAL, S.P. (NPL, New Delhi)—Ultrasonic studies and chemical kinetics ; Part I —Application of Freedman's theory. *Acustica*, **14** (1964), 174 ; Part II—Application of Tabuchi's theory. *Acustica*, **14** (1964), 178.

RAMASWAMY, G.S., RAMAIAH, M. & BALLAL, B.Y. (CBRI, Roorkee) —Matrix methods in structural analysis : Parts IV & V. *Indian Concr. J.*, **38** (1964), 148 & 193 respectively.

RAMAN, N.V. & KESHAVA RAO, M.N. (CBRI, Roorkee)—Upper bounds for collapse loads of cylindrical shells. *Indian Concr. J.*, **38** (1964), 172.

UDUPA, H.V.K., SUBRAMANIAN, G.S., UDUPA, K.S. & NATARAJAN, K. (CECRI, Karaikudi)—A comparative study of the reduction of aromatic aldehydes at stationary and rotating amalgamated cathodes. *Electrochim. Acta*, **9** (1964), 313.

Dr C. K. Atal

Dr Chand Kumar Atal has been appointed Assistant Director in the Regional Research Laboratory, Jammu with effect from May 4, 1964.

Born on Nov. 4, 1928, Shri Atal had his early education in the Government College, Lahore and obtained the B. Pharm. (1949) and M. Pharm. (1953) degrees from the Punjab University securing first class first position in both the examinations. He proceeded to U.S.A. for higher studies and joined the University of Connecticut where he obtained honours at several Ph.D. level courses. He took his doctorate degree under Dr A. E. Schwarting, well known for his work on plant chemistry and fermentation and worked for one year as assistant professor and acting director, Biological Sciences, at the School of Pharmacy of the Creighton University.

Dr Atal has specialised in pharmacognosy, phytochemistry and allied subjects and has about 70 papers on plant enzymes, alkaloids of genera *Crotalaria* and *Piper*, detection of adulteration in crude drugs, etc.

Dr Atal is a member of the American Pharmaceutical Association, American Society of Pharmacognosy, Rho Chi and Sigma Xi. He is also a member of the Pharmacognosy Sub-Committee of the Indian Pharmacopoeia.

Dr S. Z. Qasim

Dr S. Z. Qasim has been appointed Assistant Director in charge of the International Biological Programme (Cochin) of the Indian Ocean Expedition with effect from June 1, 1964.

Born on Dec. 31, 1926, Shri Qasim had his early education at Allahabad. He graduated in 1949 and took the M.Sc. degree in zoology in 1951 from the Aligarh Muslim University and in the same year was appointed lecturer in the University where he later became Reader in Fisheries. In 1953 he proceeded to U. K. for higher studies and took the Ph.D. degree in marine biology from the University of Wales in 1956. In 1962 he was appointed Professor of Fisheries Biology in the Central Institute of Fisheries Education, Bombay. Dr Qasim has puplished about 30 papers in his special fields of marine zoology, fish and fisheries, physiology, experimental biology, ecology and hydrobiology. He is a life member of Marine Biological Association of U. K. and India, member of the British Ecological Society and many other scientific societies.

Visitors

Shri Asoka Mehta, Deputy Chairman, Planning Commission and Shri S.G. Barve, Minister for Industries, Government of Maharashtra, visited the National Chemical Laboratory, Poona on May 25, 1964.

Dr F.H. Hooke of the Aeronautical Research Laboratories (ARL), Melbourne, visited the National Aeronautical Laboratory, Bangalore on June 19, 1964 and delivered a lecture on the activities at ARL in the field of fatigue.

Prof. I.N. Rabinowitz, Associate Director, Computer Centre, Princeton University, U.S.A., who is presently associated with the Computer Centre of the Indian Institute of Technology, Kanpur, visited the Central Building Research Institute, Roorkee and delivered lectures on 'Systems programming for IBM 1620 digital computer' during May 11-14, 1964.

Prof. F.S. Acton and Prof. H.D. Huskey, Indian Institute of Technology, Kanpur, visited the Central Building Research Institute, Roorkee and delivered lectures on 'Numerical analysis and computer logic' during May 22-25, 1964.

Dr R. Griffiths, Visiting Professor of Electronics at the Institute of Radiophysics, Calcutta, visited the Birla Industrial & Technological Museum, Calcutta on June 20, 1964 and delivered a popular lecture on 'Communication via the moon'.

NCL, Poona—Shri Asoka Mehta observing a diffraction pattern obtained from the electron diffraction camera fabricated at the Laboratory

Dr I. C. Chopra

Dr I. C. Chopra, Deputy Director, Regional Research Laboratory, Jammu, has been appointed on transfer General Manager, Drug Farms, Jammu & Kashmir. Dr Chopra will exercise the powers of director for administrative, financial and scientific matters in connection with the work of the Drug Farms.

Shri B. S. Kesavan

The Vice-President, CSIR, has been pleased to order that Shri B.S. Kesavan, Director, Insdoc, New Delhi shall also look after the work of the Publications & Information Directorate in addition to his own duties (July 7, 1964).

STAFF NEWS

Appointments

Dr N. M. Singh—Senior Scientific Officer: Grade I, Central Design and Engineering Unit, CSIR Secretariat, New Delhi (June 15, 1964).

Dr J.S.S. Lakshminarayana—Senior Scientific Officer: Grade I, CPHERI, Nagpur, (June 15, 1964).

Drs J.G. Joshi, S.K. Dhar & A.D. Joshi—Pool Officers, NCL, Poona (Feb. 17, April 21 & May 14, 1964 respectively).

Shri M.S. Saha—Pool Officer, NML, Jamshedpur (April 22, 1964).

Promotions

Sarvashri Y.D. Prasadarao, S. Viswanathan, V.K. Venkatesan, N.V. Parthasarathy & Dr M.S. Venkatachalapaty, Junior Scientific Officers–Senior Scientific Officers: Grade II, CECRI, Karaikudi (June 12, 1964).

Shri Y.V.P. Ramachandra Row, Senior Scientific Assistant—Senior Scientific Officer: Grade II, CECRI, Karaikudi (June 12, 1964).

Shri R. Viswanathan, Senior Scientific Assistant—Personal Assistant (Technical) to Director, CECRI, Karaikudi (June 12, 1964).

Shri G. Janakiraman—Electrical Engineer, CECRI, Karaikudi (June 12, 1964).

Resignations

Drs D.R. Shridhar & T. R. Thyagarajan, Senior Scientific Officers: Grade II, CDRI, Lucknow (May 12 & May 14, 1964 respectively).

Dr K.R. Biswas, Senior Scientific Officer: Grade I, CFRI, Jealgora (March 3, 1964).

Shri Nirmal Biswas, Junior Scientific Officer, CFRI, Jealgora (May 2, 1964).

Shri J.N. Bhowmick, Senior Scientific Officer: Grade II, CFRI, Jealgora (June 16, 1964).

Dr B.C. Subba Rao, Senior Scientific Officer: Grade I, NCL, Poona (May 31, 1964).

* * *

Dr B.R. Nijhawan, Director, NML, Jamshedpur, has been nominated a member of the Board of Directors of the Gujarat Mineral Development Corporation Ltd of the State Government.

Dr Baini Parshad, Honorary Editor (Zoology), Publications and Information Directorate, has been nominated a member of the Central Advisory Board of Biology for Zoological Survey of India and Botanical Survey of India vice Dr M.B. Naidu of RRL, Hyderabad.

Dr A. Lahiri, Director, CFRI, Jealgora, has been re-elected a member of the Indian National Committee for the World Power Conference.

Shri S.P. Venkiteshwaran, Assistant Director, NAL, Bangalore, has been nominated member of the Editorial Advisory Committee of the Aeronautical Society of India for 1964 and member of the Council of the Indian Academy of Sciences.

Shri S.K. Mitra, Senior Scientific Assistant, CFRI, Jealgora, has been elected an Associate Member of the Institute of Fuel, London.

Shri B.N. Bose, Junior Scientific Officer, CFRI, Jealgora, resumed duties on April 21, 1964 after completing 9 months' deputation in France under the Indo-French Technical Cooperation Scheme.

Dr S.C. Bhattacharyya, Assistant Director & Dr P.K. Bhattacharya, Senior Scientific Officer, NCL, Poona, participated in the Symposium on the Chemistry of Natural Products at Koyto and the Symposium on the Chemistry of Microbial Products at Tokyo. Dr S. C. Bhattacharya presented a paper entitled 'Spiro-terpenoid' at the first symposium.

Dr P.S. Gill, Director, CSIO, Chandigarh, proceeded on deputation to the University Corporation for Atmospheric Research, Boulder. Colorado, U.S.A. on May 24, 1964 to pursue research.

Prof. S. R. Mehra, Director, CRRI, New Delhi, attended as a delegate of the Government of India the Twelfth Session of the World Road Congress held in Rome during May 10-16, 1964 under the auspices of the Permanent International Association of Road Congresses.

Dr Y. V. Somayajulu, Senior Scientific Officer, NPL, New Delhi, attended the International Space Symposium at Rome during May 8-20, 1964.

Shri R. S. Mehta, Director, CPHERI, Nagpur, who is a member of the Executive Board and Scientific & Technical Committee of the International Water Supply Association attended, on invitation from the Association, the Sixth International Water Supply Congress held at Stockholm during June 15-19, 1964 and delivered a lecture on 'Problems of water supply in developing countries'.

Shri B.K. Majumdar, Assistant Director, CFRI, Jealgora, attended the American Conference on Coal Science held in the Pennsylvania State University in June 1964.

Shri H.N. Shrivastava, Junior Scientific Assistant, CPHERI, Nagpur, was invited to present a paper on 'Significance of Oligochaetes in the biological evaluation of water quality' to be read before the WHO scientific group meeting on 'Biological estimation of water pollution levels' held at Geneva during June 1-6, 1964.

Shri K.R. Khan, Senior Scientific Assistant, CPHERI, Hyderabad Zonal Centre, was invited to attend the WHO scientific group meeting on 'Biological aspects of microchemical pollution of water systems' held at Geneva during June 8-13, 1964. Shri Khan presented a paper entitled 'Potentialities of alage in the bioassay of microchemical pollutants in water supplies'.

Dr A.P. Mitra, Assistant Director, NPL, New Delhi, attended on deputation the Space Research Meeting at Florence during May 5-20, 1964, and the meeting of the Scientific Sub-Committee of the United Nations on Outer Space at Geneva during May 22-June 12, 1964.

Dr A. Ghosal & Shri N. Sen of the Survey & Planning of Scientific Research Directorate, CSIR, New Delhi, will be course director and one of the lecturers respectively of a two-week introductory course in operational research being organized by the Delhi Productivity Council during July 27-Aug. 8, 1964 at the premises of the Productivity Council at Lajpat Nagar, New Delhi.

PATENTS

Filed

87991 : *Preparation of saturated, unsaturated and hydroxy fatty alcohols by hydrogenolysis*—A. J. Pantulu, K. T. Achaya, G. S. Sidhu & S. H. Zaheer, RRL, Hyderabad.

92976 : *Improvements in or relating to the isolation of trilaurin or lauric acid from the fruits of Cinnamomum cecidodaphne* Meissn—A. Singh, S. N. Srivastava, S. N. Sharma & K. N. Kaul, NBG, Lucknow.

93609 : *Simple and trialkyl gallates of 1-hydroxyalkyl-1,2,3,4-tetrahydroquinolines*—S. H. Zaheer, G. S. Sidhu & D. Hejeebu, RRL, Hyderabad.

93610 : *1(Hydroxyalkyl)-1,2,3,4-tetrahydroquinolines and preparation thereof*—S. H. Zaheer, G. S. Sidhu & D. Hejeebu, RRL, Hyderabad.

1952/64 (*Denmark*) : 4910/64 : (*Switzerland*) : 15201/Fi (*Austria*) : 971138 (*France*) : *Processing of dry ready-to-wet sausage casings from cattle, goat, sheep, pig and other mammalian intestines*—S. K. Barat, CLRI, Madras.

Accepted

82822 : *A process for the manufacture of high alpha cellulose dissolving grade pulps by alkaline pulping method*—C. M. Vyas, D. S. Bendale & M. B. Mahajan, NCL, Poona.

83364 : *Manufacture of hexachloroethane*—N. A. Bhat, M. Goswami & M. U. Pai, NCL, Poona.

Sealed

78216 : *A process for the production of 3-pentadecylcyclohexanol from cashewnut/shell liquid*—S. C. Sethi, D. D. Nanavati & B. C. S. Rao, NCL, Poona.

79212 : *Improvements in and/or relating to the electrolytic reduction of m-dinitrobenzene to 2:4-diaminophenol*—H. V. Udupa, G. S. Subramanian & K. S. Udupa, CECRI Karaikudi.

80742 : *A process for the production of Diesel fuel from low temperature coal tar or fractions thereof*—B.S.N. Rao, K.M. Murad, R. Vaidyeswaran, A.V. Ramaswamy, M.G. Krishna & S.H. Zaheer, RRL, Hyderabad.

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ENGINEERING AND MANAGEMENT COURSE

The South India Textile Research Association is organising an Engineering and Management Course at Carlton Hotel, Kodaikanal, during August-September 1964. The course, which is residential in nature, is designed to contribute to the professional development of top management personnel of the textile industry. It will afford facilities for intensive training as well as for formal and informal discussions among the participants and the members of the faculty on various problems for the interchange of knowledge and experience.

The latest techniques like operations research, critical path method, etc., used in decision-making by top executives, will be dealt with by guest speakers from the Indian Institute of Management, Calcutta, educational institutions, practising chartered accountants, research workers and others. Nearly forty participants from the member mills are expected to attend the course.

Dr G. S. Sidhu

Dr G.S. Sidhu has been appointed Director, Regional Research Laboratory, Hyderabad with effect from June 24, 1964. Dr Sidhu's biography has been published in *CSIR News*, Vol. 13, No. 6, p. 4.

Shri G. S. Chowdhury

Shri G. S. Chowdhury, Deputy Director-in-charge, CMERI, Durgapur, has been appointed Director, Regional Research Laboratory, Bhubaneshwar, Orissa. He took charge on June 13, 1964. Shri Chowdhury's life sketch has been published in *CSIR News*, Vol. 13, No. 8, p. 4.

Dr N. K. Panikkar

Dr N. K. Panikkar, Director, Indian Ocean Expedition, New Delhi represented India at the third session of the Inter-governmental Oceanographic Commission which met at Unesco Headquarters in Paris during June 9-19, 1964. The Commission took important decisions relating to the development of oceanography as a global science. Programmes of work on cooperative investigations like the Indian Ocean Expedition, the Tropical Atlantic and Kurushio were discussed in detail and procedures for co-ordination and data exchange in the field of oceanography were adopted. General Scientific framework on the World Oceans Study was discussed and adopted for circulation to member governments for further examination and development of national programmes. Well over a hundred oceanographers from about thirty member countries participated in the discussion.

The Commission unanimously elected Dr Panikkar as the President for the ensuing period with Prof. Lacombe of France and Prof. Suguwara of Japan as Vice-Presidents.

NAL, Bangalore—Shri M. C. Chagla, Union Minister for Education and Vice-President, CSIR, visited the Wind Tunnel Centre of the Laboratory, on July 11, 1964 and turned the first sod for the foundation of the 4 ft×4 ft trisonic wind tunnel.

IIBEM, Calcutta

The laboratories and office of the Indian Institute for Biochemistry and Experimental Medicine have shifted from P-27, Prinsep Street, Calcutta-13 to their new building at 4, Raja S.C. Mullick Road, Jadavpur, Calcutta-32 with effect from June 1, 1964.

B R I E F S

Mining Gallery opened at BITM

Shri Asoke Kumar Sen, Union Minister for Law and Social Security, inaugurated the 'Mining Gallery' at the Birla Industrial and Technological Museum, Calcutta on June 27, 1964.

Shri S. K. Bagchi, Curator-in-charge of the Museum welcomed the distinguished guests.

While emphasizing the importance of mining in the economy of India, Shri Sen pointed to the utility of the museum which had opened opportunities to the people, specially the students, to have a comprehensive idea of the application of science and technology for the country's prosperity.

The new gallery, the tenth in the Museum, traces the development of mining in India and gives a comprehensive idea of the present-day techniques. It contains many exhibits on the development of the systems of mine support, mineral getting, ore transportation, mine ventilation, underground illumination and mine pumps, etc. Some of the interesting models displayed in the gallery are : surface layout of a mine, shaft sinking, pick mining, shot-hole drilling, and underground arch support.

Digital Computer Centre

An IBM 1620 electronic digital computer system with 60,000 memory locations has been installed at the Central Building Research Institute, Roorkee.

As part of the programme of training scientists and engineers in the use of various programming languages and numerical analysis a series of courses was organised by the IBM. One of the courses was on numerical analysis which included lectures on linear programming, critical path methods, matrix inversion and numerical methods of handling differential equations.

Course on Folded Plates and Shells of Double Curvature

An advanced summer course on 'Folded Plates and Shells of Double Curvature' was organised at the Central Building Research Institute, Roorkee during May 27-June 16, 1964. Twenty trainees from educational institutions, consulting and contracting firms and the government departments attended the course. Lectures, design sessions, demonstrations and field visits were arranged as part of the course which was conducted by the Scientists of the Structures Division of the Institute and the staff of the Civil Engineering Department of the Roorkee University.

NAL, Bangalore

A complete Data Processing System for the 1 ft Trisonic Wind Tunnel has been obtained through U.N. Special Fund at a total cost of about one million rupees. This includes a Data Acquisition System made by *Electronics Associates Ltd* of U.K. according to NAL specifications and a Digital Computer (SIRIUS) made by *International Computers & Tabulators Ltd*, U.K.

Visitors

Mr Thorleif Barlag, U.N. expert from Norway, visited the Central Glass & Ceramic Research Institute, Calcutta on June 23, 1964,

Mr T. Garai of the Institute for General and Inorganic Chemistry, Eotvos Lorand University, Budapest, Hungary, visited the Central Glass & Ceramic Research Institute, Calcutta on June 30, 1964.

Dr Arne Bruusgaard, M.D., Chief of Medical Section, State Labour Inspection, Oslo, Norway, a World Health Organisation Consultant, who is making a study of Industrial and Occupational Health in India under invitation from the Government of India visited the Central Mining Research Station, Dhanbad on July 13, 1964. Dr Bruusgaard was shown around the various Laboratories of the Health Division where he discussed at length with the research workers on their investigations. He was particularly impressed by the programme of work on hand in regard to survey of pneumoconiosis amongst coal miners and also the study of the fatigue of mine workers engaged in various mining operations.

Research Papers

Rangaranjan, S.K. (CECRI, Karaikudi)—On a new formula for $P^{m}_{m+n}(\cos \alpha)$. *Quart. J. Math.*, **15** (1964), 32-34.

Rangarajan, S.K. (CECRI, Karaikudi)—Series involving products of Laguerre polynomials. *Proc. Indian Acad. Sci.*, **58** (1963), 362-367.

CBRI, Roorkee—Digital Computer System

RESEARCH PROGRESS

National Laboratories

NML, JAMSHEDPUR

Structure of Liquid Metals—Extensive research work conducted on the study of structure of liquid metals has shown that the liquid metal consists of (i) clusters of short range order in oscillatory motion around an equilibrium position, (ii) domains without any equilibrium position, having random location and gas like degrees of freedom, and (iii) vacancies or holes. Quantitative idea about the size of the clusters of short range order and the distribution of the alloying elements in the liquid state have been studied adopting an experimental technique similar to that used for studying the size of the dispersed phase in colloidal solutions. The sedimentation characteristics of the melt have also been studied in a liquid metal centrifuge which was designed and fabricated at the Laboratory.

The experimental work conducted on the hypo-eutectic, eutectic and hyper-eutectic alloys of the Pb-Sn system showed that the cluster size does not depend on composition at 400°C. and on temperature in the range 320-400°C. The average diameter of the cluster was calculated to be 35Å. As the structure of metals and alloys in the liquid condition has profound influence on the mechanical properties, it is anticipated that the knowledge about the structure of liquid metal alloys would provide an insight into the morphology of the structure in the solidified condition.

CPHERI, NAGPUR

Portable Mono-bed Deioniser—A demineralising unit with a capacity of about 40 litres per cycle has been designed and fabricated. The unit is mixed-bed type and the resins used are strong acid cation exchanger (Duolite C-20) and strong base anion exchanger (Duolite 120-D). The quality of water treated in this deioniser has been consistently found to be good; the conductivity is near 0.10 mho which is hardly obtainable in ordinary distillation or in multiple bed system. The main features of the unit are easy regeneration; it does not need rigorous operational control, necessary with other such units. This type of unit could be very useful for providing high quality deionised water for analytical purposes in research laboratories.

The unit is quite handy, being 87.8 kg. in weight and 4 ft x 1 ft in size. The estimated cost is about Rs 200.

CFRI, JEALGORA

Studies on Reduced Coals—The mechanisms of oxidation, dehydrogenation and pyrolysis which had been earlier advanced from this Institute for the determination of the broad structural features of coal, have been made use of for determining the structure of reduced coals.

Several vitrain and anthracite samples were reduced to varying degrees by the technique of lithium and ethylenediamine (introduced by Wender *et al.*) as this technique of reduction creates more of hydroaromatic structure at the expense of the aromatic structure, the other general structural features of coal remaining largely the same. By extending the earlier techniques of oxidation, pyrolysis and dehydrogenation to such reduced coals, theoretically re-allocated structural parameters, e.g. the aromaticity and the alicyclicity of the reduced coals, have been experimentally determined with a high degree of precision.

CGCRI, CALCUTTA

Physico-chemical Properties of Indian Clays—X-ray diffraction study of seventeen Indian clays at room temperature and after heat treatment at 600°C. and 1025°C. was made with a view to determining the mineralogy and for understanding the changes during firing. The study led to the following inferences. The predominant clay mineral in 15 clays was kaolinite. Tinapahar and Hathi-ki-Dhani clays were mixtures of kaolinite and montmorillonoid. Bhandak clay had the highest degree of crystallinity. Three new, weak-to-medium intensity reflections with d=1.39, 1.37 and 1.34 kX were located in the X-ray pattern of kaolinite. X-ray method of determining the degree of crystallinity is suitable with pure kaoline and is unsuitable with impure sample especially when contaminated with impurities like mica, felspar, quartz

CPHERI, Nagpur—Portable mono-bed deioniser

and goethite. Meta-kaolinite is not completely amorphous but possesses some short range order. The phases formed on recrystallisation of meta-kaolinite are the same in kaolinite from different origins. Well crystallised kaolinite yields greater quantity of mullite than bo/3 disorderded kaolinite.

STAFF NEWS

Appointments

DR M.C. KHOSLA—Scientist B, CDRI, Lucknow (June 15, 1964).

DR J.S. CHAWLA—Scientist B, RRL, Jammu (June 29, 1964).

SHRI A.W. KHAN—Scientist B, CDRI, Lucknow (June 12, 1964).

Promotions

SHRI K. V. SATYANARAYANA, Senior Scientific Assistant, NCL, Poona—Scientist B, CSMCRI, Bhavnagar (May 14, 1964).

SHRI S. K. SRIVASTAVA, Scientist A—Scientist B, CDRI, Lucknow (June 12, 1964).

SHRI K.G.R.S. JAIN, Scientist A—Scientist B, CBRI, Roorkee (June 15, 1964).

SHRI V. NARASIMHAN, Scientist B—Scientist C, CBRI, Roorkee (June 18, 1964).

DR N.N. SHARMA, Scientist B, CPHERI, Nagpur—Scientist C, CSMCRI, Bhavnagar (June 20, 1964).

DR A. C. ROY, Scientist B—Scientist C, CDRI, Lucknow (June 25, 1964).

Resignations

SHRI P. K. JAIN, Scientist B, CBRI, Roorkee (June 30, 1964).

SHRI P.V. PAWAR, Scientist, B, CBRI, Roorkee (July 8, 1964).

Deputations

SHRI K. B. MATHUR, Senior Scientific Assistant, CDRI, Lucknow—Scholarship offered by Federal Republic of Germany (June 26, 1964).

DR A.B. KAR, Scientist, CDRI, Lucknow—Conference of International Congress on Comparative Endocrinology (July 15-August 28, 1964).

Nominations

DR B.R. NIJHAWAN, Director, NML, Jamshedpur—member, Coal Advisory Council, Union Ministry of Steel & Mines.

DR B.K. BHATTACHARYA, Scientist, CDRI, Lucknow-member, Committee on Animal Experimentation under the Prevention of Cruelty to Animals Act 1960, Union Ministry of Food & Agriculture.

DR H.A.B. PARPIA, Director, CFTRI, Mysore—member, Nutrition Advisory Committee of the Christian Medical College & Hospital, Vellore.

Doctorate Award

SHRI P. RAY CHAUDHURI, Scientist, CRRI, New Delhi—Ph.D. (Leeds University, U. K.) ; thesis : *Analysis of interconnected beam systems beyond the elastic range.*

Shri A. N. Kapoor

SHRI AMAR N. KAPOOR, Scientist C, National Metallurgical Laboratory, Jamshedpur, has been appointed on promotion Scientist E in the Laboratory with effect from March 13, 1964.

Born on March 1, 1917 at Jaunpur (U. P.), Shri Kapoor had his early education at Jaunpur and Rajgarh (Biaora) and took his M.Sc. degree in Chemistry from the Allahabad University in 1940. He started his professional career at the Ordnance Laboratory, Kanpur where he served till August 1944. He was Chief Chemist at the National Iron & Steel Co. Ltd, Belur (Howrah) till March 1949 and later worked for some time in the Indian Iron & Steel Co. Ltd, Kulti. He joined the National Metallurgical Laboratory as Junior Scientific Officer in September, 1949.

Shri Kapoor was deputed in 1958 to U. K. under the Colombo Plan for 9 month's training in aluminium coating and other surface protection methods. He has carried out research on problems relating to physical as well as extractive metallurgy. His valuable contributions include the process for hot-dip coating of ferrous materials and development of aluminothermic reduction process for producing aluminium-titanium alloys from Indian ores. He has to his credit several research papers, investigational reports and literature surveys besides a patent on 'Hot dip aluminising of ferrous materials'.

Shri Kapoor was elected a Member of the Indian Institute of Metals in 1951 and an Associate Member of the Institution of Metallurgists (London) in 1954.

Shri T. K. Natarajan

SHRI TOPPUR KRISHNASWAMY NATARAJAN, Scientist C, Central Road Research Institute, New Delhi, has been appointed Scientist E (Soils) in the Institute with effect from May 5, 1964.

Born on Jan. 30, 1930 at Madras, Shri Natarajan was educated in the Madras University and later in the Annamalai University where he took his B.E. degree in civil engineering. Proceeding to U.S.A. for higher studies, he took his M.S. degree in civil engineering, majoring in soil mechanics and foundation engineering at the University of Illinois. He worked as Bridge and Soils Engineer in designing and contracting organizations in Chicago and was in charge of bridge foundation projects on the East-West Indiana Toll Road and Pile Foundation problems relating to transmission line towers.

In 1956 Shri Natarajan joined the Central Road Research Institute as Senior Scientific Officer. His investigations at the Institute relate to the application of soil mechanics to the solution of foundation problems. Notable among the projects that he has tackled are : the Delhi subsoil water problem, foundation treatment for the Eastern Express Highway in Bombay, the National Highway 8A across the desert swamps of the Little Rann of Kutch in Gujarat, the stabilisation of swamps in Visakhapatnam for the ore-handling scheme, the stability of hillside roads and analysis of landslides in border areas. He has contributed towards the application of vertical sand drains in India and towards developing the use of partially penetrating vertical sand drains for stabilising soft deposits. The more important experimental investigations carried out by him concern the creep strength and thixotropic characteristics of clays. Shri Natarajan has to his credit a large number of research papers on soil mechanics relating to roads and bridges.

We regret to announce the death of Shri P.M. Nabar, Secretary, Pharmaceuticals & Drugs Research Committee, CSIR and formerly Officer-in-charge CIMPO, on July 16, 1964.

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CSIR NEWS

VOL. 14 AUGUST 10, 1964 : SRAVAN 19, 1886 NO. 15

NEHRU COMMEMORATION NUMBER AND NEHRU PRIZES

Institution of two Nehru prizes for popular science, each of Rs 1000 annually for the best article published in the popular science journals, *Science Reporter* and *Vigyan Pragati*, during the year has been announced.

Dr S. Husain Zaheer, Director-General, CSIR, made this announcement on August 3, 1964 at a function when the Vice-President of India, Dr Zakir Husain, released the Nehru Commemoration Number of *Science Reporter*.

Speaking on the occasion, Dr Zakir Husain said that development of scientific attitude and thinking in India would be the greatest memorial raised to Pandit Nehru.

The Nehru Commemoration Number of Science Reporter displays a relatively less known aspect of late Prime Minister, Nehru : the man of science. The theme has been supported by articles and speeches of Pandit Nehru on various aspects of science and society and by a description of his contribution to modern Indian science in the shape of numerous research institutions now dotting the country. A short biography recording the evolution of Nehru's views on science and society, prepared by O. P. Sharma, editor of the special number, completes the picture of Nehru as a man of science.

Profusely illustrated, the special number carries more than 150, hitherto unpublished, photographs of Pandit Nehru and articles on Nehru and science, contributed by eminent scientists and public men. They include : Earl Mountbatten, C. F. Powell, M. M. Newitt, D. S. Kothari, C. D Deshmukh, Homi J. Bhaba, S. Husain Zaheer, etc.

"I recall", says Earl Mountbatten, "that Pandit Nehru, the man of vision, did not regard science as just an intellectual exercise, nor that scientists should be unaware of the responsibility they bear towards their country and the world. He believed that science should be used for the benefit of man".

"Pandit Nehru thought that scientists should become the poets and visionaries of our time in order that the human society may be inspired to achieve that great future which scientific advance has put within our grasp", says C. F. Powell.

D. S. Kothari points out that Nehru believed science must think in terms of the few hundred million people in India.

While thanking the Vice-President, Dr Zaheer mentioned that it was one of the objectives of the Council's journals to promote scientific attitude and thinking in India which the Vice-President had referred to earlier. He also referred to the decision of the Council to bring out 24 low-cost publications every year in Hindi on various subjects in simple and popular language. Out of these, three have already been published.

The Council also proposes to accelerate the pace of its work in regard to popularisation of science

(*Contd on p. 2, col. 3*)

CSIR Secretariat, New Delhi—Dr Zakir Husain, Vice President of India, releasing the Commemoration Number

MEETINGS

A meeting of the Executive Council of the NCL, Poona, will be held on Aug. 28, 1964 at 9.30 a.m. Dr T.R. Govindachari will preside.

A meeting of the Chemical Research Committee will be held during August 21-22, 1964 at the Regional Research Laboratory, Hyderabad.

HUMAN RELATIONS IN INDUSTRY

The South India Textile Research Association is organising the sixth conference on Human Relations in Industry at Coimbatore during Aug. 24-25, 1964. The conference will be inaugurated by His Highness Shri Jayachamaraja Wadiyar, Governor of Madras on Aug. 24, 1964.

The conference will have three sessions in addition to the inaugural covering : Productivity and job satisfaction, problem of social change, the rural worker in industry, metric system and adaptation to change, welfare in industry, role and function of welfare officers, industrial housing for employees,

(*Contd on p. 2, col. 2*)

BRIEFS

Science and the Nation

A four-day symposium on Science and the Nation during the Third Five Year Plan, organised by the Association of Scientific Workers of India at Vigyan Bhawan, New Delhi during July 27-30, 1964 was inaugurated by the President of India, Dr S. Radhakrishnan on July 27, 1964 at the NPL Auditorium. President Radhakrishnan said on the occasion that the newly emerging independent countries were determined to make use of science and technology for the betterment of their people and it is only through science and technology that India and other countries which had emerged from subjection into freedom could raise their living standards.

In a reference to the late Prime Minister Shri Jawaharlal Nehru, Dr Radhakrishnan said that the late Prime Minister had made no insignificant contribution to stimulating a scientific outlook among the people. The scientific laboratories in India, the Atomic Energy Commission and a host of institutions bear witness to his spade work.

The symposium which extended into eight sessions was attended by delegates nominated from Central Government Ministries, Planning Commission, Atomic Energy Commission, Director General of Technical Development, CSIR institutions, public undertakings, universities and several research institutions. Besides, more than 40 scientists from Afro-Asian countries attended the symposium as observers. More than 100 research papers were presented and discussed.

National Biological Laboratory A Plan

A brochure (pp. 27) on a plan for the proposed National Biological Laboratory has been published. It stresses the importance of modern biology and outlines the scope of work and proposed organization for the Laboratory. Some details of basic equipment required, the land and buildings and estimated expenditure on the establishment of the Laboratory are also given.

Mr G.H. Stearman

Mr G.H. Stearman of the Department of Electrical and Control Engineering at the College of Aeronautics, Cranfield, U.K., joined the National Aeronautical Laboratory, Bangalore on July 21, 1964 as a visiting expert deputed by the International Civil Aviation Organization under the U.N. Special Fund Aid Programme for one year.

Born in Hove, Sussex in 1927, Mr Stearman obtained an external B.Sc. (Engng) degree of London University in 1946. He served for two years in the Royal Engineers on an emergency commission and afterwards joined the Cable & Wireless Ltd, London to work on FMVF communication systems. In 1951 he moved to Southern Instruments Ltd. and worked on the design of special purpose analogue computing and digital trace-reading equipments. Since 1957 he has been associated with the College of Aeronauticus at Cranfield. He is an Associate Member of the Institution of Electrical Engineers.

Mr Stearman will assist in the planning and design of instrumentation, control and data handling systems associated with the various wind-tunnel projects now in hand.

Visitor

Mr Malkov, Chief Engineer, Uralmash, Zavod accompanied with a team of five leading scientists and engineers from U.S.S.R. visited the CMERI, Durgapur on July 22, 1964.

Technical Information Letter for Glass Industry

The CGCRI, Calcutta has started bringing out Technical Information Letters for the benefit of glass and ceramic industries. The letters contain small descriptions of selected topics of direct interest to industrial establishments along with citation of the journal, titles, names of authors along with volume, year and page. The information is arranged separately for glass, refractories and ceramic industry.

(*Contd from p. 1, col. 3*)

etc. The conference will be attended by over two hundred delegates representing labour, management, academic and government interests.

CMRS Annual Report

The Annual Report of the CMRS, Dhanbad for the year 1962-63 has been published. Beginning with an introduction emphasising the problems of mine fire, mine ventilation and illumination surveys, geothermic gradient in mines, hydraulic stowing of crushed stone, etc., the report (pp. 174) summarises the research projects under the four divisions : Health, Ventilation, Mining and Engineering; testing and analysis work carried out at the Station and the technical services rendered to industry and Government Departments. Besides, there are 11 appendices relating to the membership of Executive Council, staff, patents, publications, visitors, etc.

STAFF NEWS

Promotions

SHRI Y.P. BAJAJ, Civil Overseer—Civil Engineer, CSIR Secretariat, New Delhi (May 2, 1964).

SHRI M.G. POTDAR—Scientist B, CECRI, Karaikudi (June 29, 1964).

SHRI H.N. VENKOBARAO— Scientist B, CECRI, Karaikudi (July 13, 1964).

Nominations

SHRI PREM PRAKASH, Scientist, NPL, New Delhi—Member, Designing Special test measures for verifying commercial measures dispensing pumps and filling machines, Ministry of International Trade, New Delhi.

DR M. SWAMINATHAN, Scientist, CFTRI, Mysore—Member, Board of Studies in Home Science, University of Madras.

(*Contd on p. 4, col. 1*)

(*Contd from p. 1, col. 2*)

by releasing periodically bulletins to Indian press regarding the various developments of science in India and abroad.

Further, the Council has decided to bring out the Hindi translation of the "Wealth of India", a dictionary of Indian raw materials and industrial products. The glossary of the subject titles of all the 8 volumes of the Hindi Version of Wealth of India has been compiled and first part already printed.

RESEARCH PROGRESS

National Laboratories

CMRS, DHANBAD

Geothermic Gradient— During planning for new and deeper extensions to the existing mine working, it is very useful to have information regarding the geothermic gradient (increase in depth for unit increase of strata temperature). The staff at the station took the opportunity of studying the temperatures of the strata at the bottom of boreholes, at the time when the boreholes were being drilled to locate the depth, and nature of the coal seams by the Geological Survey of India and National Coal Development Corporation.

Nearly 150 readings were taken in 30 boreholes in Jharia, Raniganj, Bokaro and Giridih coalfields covering a maximum depth of 1003 m. For the Jharia coalfield area the gradient seems to be approximately 27.4 m. per °C. A constant temperature of nearly 27.2°C. was observed at a depth of 18.3 m. from the surface. The temperature recorded at a maximum depth of 1003 m. was 61.7°C.

The geothermic gradient observed for the Jharia coalfield area was found to be higher than what was generally believed before. For this gradient the expected virgin strata temperatures at depths of 1220 m. and 1524 m. from the surface would be respectively 71°C. and 82.2°C. Indeed the strata temperatures pose a major problem to the creating of proper ventilation in deep mines.

CECRI, KARAIKUDI

Vacuum Evaporation-cum-sputtering Unit : A metal evaporation-cum-sputtering research unit has been fabricated at the Institute, using mostly indigenous materials. Rotary pump and oil diffusion pump are the only imported components that have been used. The evaporation of the material is achieved by heating it under good vacuum by a high current at low voltage, and the cathode sputtering by applying a high voltage d.c. of the order of 2-3kV. in argon atmosphere of reduced pressure by connecting the cathode to be sputtered to the negative of the high voltage source. Provision has been made while designing and fabrication for cathode sputtering and ion bombardment and for research work on vacuum deposition and study of thin layers.

The unit is in routine operation at present for getting aluminium, silver and gold deposits which are required in connection with the work on the development of lead sulphide photo cells, dry electrolytic condensers and ultrasonic work. With slight modification it is possible to incorporate a photo-cell thickness monitor for controlling the thickness of vacuum deposits on transparent insulators as also on opaque substrates.

CEERI, PILANI

Microwave Parametric Amplifier—A slab-line parametric amplifier suitable for application at L-band (21 cm. wavelengths) has been designed and fabricated, using a varactor diode (cut off frequency; 30 kmc). The amplifier uses N-type female connectors for signal input—and output—and pump input-ports, and employs the broad-

CECRI, Karaikudi—Vacuum evaporation-cum-sputtering unit

band circulator developed at the Institute (*CSIR News*, Vol. 13, No. 10, p. 4.) The degenerate version of the parametric amplifier has been tested successfully ; typical performance characteristics are : Centre frequency of the signal : 1340 Mc; gain : 18-20 db; 3db bandwidth ; 20-30 Mc; pump frequency : 2560 Mc ; pump power : only 30 milliwatts. The centre frequency of operation can be altered somewhat by tuning the circuit backing the varactor and by a corresponding change of the pump frequency. The gain bandwidth product of the amplifier is close to the theoretical value for the single tuned circuit employed in this construction.

The parametric amplifier can be used in radar receivers (to increase the range of the equipment) and in radio astronomy.

STAFF NEWS

(*Contd from p. 2, col. 3*)

PROF. S.R. MEHRA, Director, CRRI, New Delhi—Member, Unesco Working Group on Low Cost Roads.

DR B.R. NIJHAWAN, Director, NML, Jamshedpur—Member, Board of Directors of the Gujarat Mineral Development Corporation Ltd, Member, Advisory Committee, Metallurgical Engineering Department, Indian Institute of Technology, Kharagpur.

SHRI R.M. KRISHNAN, Scientist, NML, Jamshedpur—Representative of NML to the Foundry Sectional Committee of the Indian Engineering Association.

DR J.L. BOSE, Scientist, NCL, Poona—Member, Technological Research Sub-Committee of the Indian Central Cotton Committee, Bombay.

SHRI K.M. AGARWALA, Under Secretary & SHRI O.P. SHARMA, Editor, Hindi Unit, CSIR Secretariat, New Delhi—Principal and alternate members, Committee to draw up a list of Books on Popular Sciences of the Central Hindi Directorate, Ministry of Education.

DR T. J. DEVASSY, Scientist, CLRI, Madras—member, Gujarat State Leather Industry Advisory Committee.

DR N. K. PANIKKAR, Director, IIOE, New Delhi—member, Standing Fisheries Research Committee, Union Ministry of Food & Agriculture.

Deputations

DR R.K. GHOSH, Scientist, CRRI, New Delhi attended the Conference on Civil Engineering Problems Overseas 1964, held at London under the auspices of the Institution of Civil Engineers, England, during June 15-19, 1964. He presented a paper on 'Burnt clay puzzolana as a construction material'.

DR B.R. NIJHAWAN, Director, NML, Jamshedpur left for U.K. on July 6, 1964 to attend the Special Technical Meeting as the guest of British Iron & Steel Institute held at Sheffield.

MR F. KISS, Glass Technologist, NPL, New Delhi left India on July 9, 1964 to visit various manufacturing concerns and manufacturers of Glass working machinery and institutions in West Germany, East Germany and U.K. for five weeks.

DR S.C. JAIN, Scientist, NPL, New Delhi attended the International Conferences on Thermal Conductivity, held in U.K. during July 15-17, 1964 and Physics of semiconductors, held at Paris during July 19-24, 1964.

DR M. NARAYANA RAO, Scientist, CFTRI, Mysore proceeded to Canada on July 18, 1964 on a National Research Council Fellowship for advanced training in nutrition in the Department of National Health and Welfare, Food & Drug Directorate, Ottawa,

DR C.R. KRISHNA MURTI, Scientist, CDRI, Lucknow has been deputed to participate in the Sixth International Congress of Biochemistry in New York during July 26-Aug. 1, 1964.

Award

DR PRABHUNATH, Scientist, CGCRI, Calcutta has been awarded the Foster Research Prize in Glass Technology for 1964 by the University of Sheffield, England, for his work on 'Oxidation—reduction equilibria in glasses with particular reference to chromium ions'.

Doctorate Award

SHRI J.R. KIDWAI, Senior Scientific Assistant, CDRI, Lucknow—Ph.D. (Aligarh Muslim University, Aligarh) ; thesis : *Microbial metabolism with special reference to biosynthesis of purine in* Vibrio cholerae.

PATENTS

Filed

93611 : *3', 4', 5'-Trimethoxybenzamides derived from several benz-substituted 1, 2, 3, 4,-tetrahydroquinolines and preparation thereof*—S.H. Zaheer, G.S. Sidhu & D. Hejeebu, RRL, Hyderabad.

93612 : *Tetrahydro-1, 5-Benzoxazepines*—U.T. Bhalerao, G. Thyagarajan & G.S. Sidhu, RRL, Hyderabad.

93724 : *Substituted 2,3-dihydro-4H-1,4-benzoxazines*—Shanta Naseem, M. Mazharuddin, G. Thyagarajan & G.S. Sidhu, RRL, Hyderabad.

93725 : *Improvement in or relating to hard ferrites*—T.V. Ramamurti, C.V. Ganapathy, R. Krishnan, Aftab Ahmed, S.C. Gupta & G. Govindaswamy, NPL, New Delhi.

Sweden

4137/64 ; *Processing of dry ready-to-wet sausage casings from cattle, goat, sheep, pig and other mammalian intestines*—S.K. Barat, CIRI, Madras.

New Zealand

138370 : *Processing of mammalian intestines*—S.K. Barat, CLRI, Madras.

Norway

153612 : *Processing of mammalian intestines*—S.K. Barat, CLRI, Madras.

Accepted

85608 : *An anti-stripping agent for road binders*—S. Bagchee, CRRI, New Delhi.

Sealed

79597 : *Improvements in a continuous vertical counter current solid-gas reactor*—M.J. Shahani, NML, Jamshedpur.

81402 : *Improvements in or relating to electrodeposition of metals particularly manganese, by direct current electrolysis of aqueous solutions containing metal ions*—T. Banerjee & N. Dhananjayan, NML, Jamshedpur.

81403 : *Improvements in or relating to devices for the conversion of pig irons into high grade steels*—M.J. Shahani & Upkar Singh, NML, Jamshedpur.

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CSIR NEWS

VOL. 14 AUGUST 24, 1964 : BHADRA 2, 1886 NO. 16

SYMPOSIUM ON PALYNOLOGY

A Symposium on Palynology, the first ever on the subject in India, will be held at the National Botanic Gardens, Lucknow during Oct. 8-10, 1964. Seventy-five research papers have been submitted to be read at the Symposium which will be attended by about 50 delegates from different scientific institutions in the country.

Dr M. G. Krishna

Dr M.G. Krishna, Deputy Director in charge, Indian Institute of Petroleum, Dehra Dun has been appointed Director of the Institute. He took charge as Director with effect from June 24, 1964.

Shri M. M. Suri

Shri Man Mohan Suri, Joint Director (Diesels), Research Design and Standards Organisation, Department of Railways, has been appointed Director of the Central Mechanical Engineering Research Institute, Durgapur with effect from June 15, 1964.

Born on Jan. 13, 1928, Shri Suri received his early education at Lahore and after graduating from the Government College, Lahore, joined the superior Establishment of Mechanical and Transportation Departments of the Indian Railways at Jamalpur as apprentice, Special class, in 1945. In 1950 he was promoted as Production Engineer at Jamalpur. In 1954 he visited Italy, Germany, Switzerland, Austria, France, Belgium, Sweden and Britain on deputation as a Junior Inspecting Officer attached to the Director General of the Indian Stores Department, London. On his return to India, Shri Suri was posted as Deputy Director (Diesels) in the Diesel Department of the Research, Design and Standards Organisation.

As early as 1956 Shri Suri hit the headlines with an invention which revolutionised diesel locomotion engineering, now known as Suri transmission. The Suri transmission marked a completely new trend in diesel locomotion and forms a valuable basis for design concepts of locomotives of this kind. It provides a simple but highly efficient means for transmitting diesel power in rail traction units, employing only two circuits, a Brockhouse type of convertor-coupling, and a fluid-mechanical coupling, arranged in parallel.

In 1961 Shri Suri was promoted Joint Director (Diesels). Same year he was awarded the *Padma Shri* and in 1962 he was the recipient of the Shanti Swarup Bhatnagar Memorial Award for outstanding contribution to Engineering Sciences for the year 1962.

Dr M. L. Puri

Dr Manohar Lal Puri, Scientist C, Central Road Research Institute, New Delhi, has been appointed, on promotion, Scientist E in the Institute, with effect from July 18, 1964.

Born in Gujrat (Punjab), Shri Puri had his college education (1932-36) at the Forman Christian College, Lahore from where he obtained the B. Sc. (Hons.) Tech. and M. Sc. (Hons.) degrees. After obtaining Ph. D. degree from London University in 1949, Dr Puri was engaged on various laboratory and field problems on Soil Mechanics and Concrete Technology in connection with the construction of Bhakra-Nangal Projects. During his stay at the project, Dr Puri had the unique opportunity of setting up with up-to-date equipment the Bhakra-Nangal concrete Research Laboratory, besides over a dozen field control laboratories. Dr Puri's services at Bhakra-Nangal Projects were highly commended by the Punjab Government. Dr Puri joined the Central Road Research Institute as Senior Scientific Officer: Grade I in October 1957.

(*Contd on p. 2 col. 3*)

MEETING

A meeting of the Executive Council of CBRI, Roorkee will be held on Aug. 28, 1964, at the Institute.

STAFF NEWS

Promotions

SHRI K.M. AGARWALA, Under Secretary, CSIR Secretariat, New Delhi —Manager, Hindi Unit, CSIR, New Delhi (Aug. 13, 1964).

SHRI N.V. RAMAN, Scientist B — Scientist C, CBRI, Roorkee.

DRS C.G JOSHI, H.H. MATHUR, B.V. RAMACHANDRAN, P.N. RANGACHARI, S.S. SUBRAMANIAN and SARVASHRI V.S. KRISHNAMACHAR & S.N. BALASUBRAMANIAN, Scientists A— Scientists B, NCL, Poona (July 6, 1964).

DR N.B. DESAI, Pool Officer,— Scientist B, NCL, Poona (July 6, 1964).

Resignations

DR M.K. GHARPUREY, Scientist C, NCL, Poona (July 10, 1964).

DR A.V. DEO, Scientist B, NCL, Poona (July 31, 1964).

SHRI P.V. PAWAR, Scientist B, CBRI Roorkee (July 8, 1964).

Nominations : General

DR M.G. KRISHNA, Director, IIP, Dehra Dun—member, Oil Advisory Committee, and Working Group to study new uses of Naphtha, Union Ministry of Petroleum & Chemicals.

SHRI A. BOSE, Officer in charge, VITM, Bangalore—member, High Power Committee to prepare a scheme for the establishment of a Science Museum, Hyderabad.

DR P.S. GILL, Director, CSIO, Chandigarh—member, Board of Directors of the Company Instrumentation Limited, Ministry of Industry for implementing the Precision Instrument Projects at Kotah, Rajasthan.

(*Contd on p. 4, col. 1*)

B R I E F S

Documentation & Reprography Course

A one-year course in Documentation and Reprography was inaugurated by Dr S. Husain Zaheer, Director-General, Scientific and Industrial Research on August 11, 1964. Fifteen candidates selected from the National Laboratories, Government Departments and private institutions are attending the course.

Dr P. Lazar

Dr Peter Lazar of the National Committee for Technical Progress, Budapest, joined the Indian National Scientific Documentation Centre as Unesco Expert on Aug. 10, 1964 in connection with the setting up of the Regional Centre for Insdoc at Bangalore.

Born in 1918 in Budapest, Hungary, Dr Lazar obtained his Diploma in Mechanical Engineering in 1940 and Doctorate in Economics in 1944 from the Technical Unversity of Budapest. Dr Lazar is a specialist in industrial economics, particularly in the field of energetics and also has considerable experience in scientific and technical documentation. He worked as Chief of the Section, Ministry of Metallurgy and Engineering, Department for Energetics, Budapest during April 1953-January 1959 and as Chief of the Section, Centre for Library Science and Documentation, Budapest during 1959-1961. Prior to joining Insdoc, he was a Research Director, Research Group for Industrial Economics of the Hungarian Academy of Sciences. He was also serving as an expert in documentation and information of the National Committee for Technical Progress and was closely connected with the work of various sub-committees for documentation, such as mechanization and automation, reprography.

Dr Lazar is President of the Committee for Documentation and Library Problems of the Hungarian Office for Standardization, as well as a member of the National Committee for Documentation which is associated with the International Federation for Documentation. He was also a lecturer in documentation and information at the Institute of Engineers and Extension Training.

Visitors

Dr A. K. Som, Director, Building Research Institute, Ghana visited the CBRI, Roorkee on July 30, 1964.

Captain G.J. Murphy, Australian Army visited CBRI, Roorkee on Aug. 7, 1964.

Dr S.S. Apte, Horticulturist, Faculty of Agriculture, Kwame Nkrumah University of Science and Technology, Kumasi, Ghnaa visited the NBG, Lucknow on Aug. 11, 1964.

Prof. A.W.G.W. Mariam, Haile Sallassie University, Ethiopia and Prof. Mehdi Barkeshly, University of Tehran visited CBRI, Roorkee on Aug. 12, 1964.

Research Schemes Terminated

The following research schemes have been terminated with effect from Aug. 31, 1964 :

Controlled growth of ovaries, ovules, etc.—Dr B.M. Johri, University of Delhi, Delhi.

Heterocyclic steroids and po'ycyclic hydrocarbons—A study in chemical carcinogenesis—Prof. B.D. Tilak, University of Bombay, Bombay.

Studies on certain aspects of cholesterol metabolism—Dr S. Mukherjee, University College of Science & Technology, Calcutta.

Studies on lipid metabolism in relation to atherosclerosis—Dr S. Banerjee, S.M.S. Medical College, Jaipur.

The behaviour of flexible better piles imbedded in sand subjected to comibed vertical etc.—Shri V.N.S. Murty, Indian Institute of Technology, Kharagpur.

An investigation of the influence of adrenocorticotrophin (ACTH) etc.—Dr S. Lahiri, Presidency College, Calcutta.

Scour around bridge piers and abutments—Dr K.C. Asthana, Osmania University, Hyderabad.

(*Contd from p. 1, col 2*)

Dr Puri is a member of the Concrete Sub-Committee, convener of the Lime Sub-Committee, and member of the Building Lime Sectional Committee of the Indian Standards Institution and member of the Education Committee of the Indian Roads Congress. He has about two dozen research publications to his credit.

INSDOC, New Delhi—Dr S. Husain Zaheer inaugurating the one-year course in Documentation & Reprography, organised by the Centre

RESEARCH PROGRESS

National Laboratories

CFTRI, MYSORE

Calcium Phosphate as a New Insecticide—While carrying out experiments on the screening of some salts, food additives and related agents, tricalcium phosphate has been found to be highly toxic to the pests of stored grains. Complete inhibition of insect population could be obtained at levels even below 1 per cent of tricalcium phosphate in food grains and processed foods. The mode of action and potentiation of the effect on insects have also been studied. This observation is a break-through in the realm of insect control with a non-toxic agent —S.K. Majumder & Athia Bano.

RRL, HYDERABAD

Detection of Adulteration with Castor Oil—Thin-layer chromatography on silicagel-G using petroleum ether-ether-acetic acid (60:40:2) as a developer has been found to be effective in detecting adulteration of common vegetable oils with as little as one per cent of castor oil. The method takes only 1-2 hr. Only adulterated oils give rise to a spot having an Rf value of *c.* 0.45 which can be located by iodine vapour or sulphuric acid. Free fatty acids and autoxidation products do not interfere—G. Lakshminarayan & V.V.S. Mani.

Detection of Adulteration of Vegetable oils with Mineral Oil—Chromatography on thin-layers of alumina using petroleum ether as a developer reveals adulteration of vegetable oils with 2 per cent or more of mineral oil. The latter can be located as a deep yellow fluorescent spot on the solvent front in ultraviolet light when the plate is sprayed with an ethanolic solution of 2', 7'-dichlorofluorescein—V.V.S. Mani & G. Lakshminarayana.

IOE, NEW DELHI

Canyons in Bay of Bengal—During the recent cruises in the Bay of Bengal (Nos 15-18) Indian scientists on board INS KISTNA came across several sub-marine canyons between Vishakhapatnam and Madras and between Pondicherry and Porto Novo, South of Madras. These canyons have been observed for the first time and are different from the three canyons off Waltair which were recorded earlier by the U.S. Ship ANTON BRUUN. Net works of hill-like projections ranging from 300 to 2400 ft and valleys ranging from 30 to 2500 ft and several miles wide were found on the continental shelf in the region between Pondicherry and Porto Novo.

Sponsored Research

New Species of Nematodes in Citrus trees—Nematode parasites of citrus trees in India were studied. The species generally found associated with the citrus trees are *Scutellonema brachyurum* (Steiner, 1938) Andrassy, 1958; *Hoplolaimus indicus* Sher, 1963 and *Helicotylenchus indicus* Siddiqui, 1963. Besides these three species, three new species named as *Helicotylenchus digitatus* n. sp., *H. neoformis* n. sp. and *Rotylenchus orientalis* n. sp. have been found in citrus trees during the course of these investigations. *H. digitatus* is interesting in having a small buccal spear (20-21 microns long) and a dorsally bent digitate tail terminus and *H. neoformis* as well as *R. orientalis* have posterior branch of reproductive organs considerably reduced. No males of either species were found and it is thought that these species are digonic hermaphrodites—M. Rafiq Siddiqi & Zahid Husain, Aligarh Muslim University, Aligarh.

Botanical Exploration of Tungar Hill, Thana Dist., Bombay—The first authentic and comprehensive study of the Angiospermic flora of a region representative of the meeting place of the Konkan plains and the Western Ghats, has been carried out. In all, specimens of 466 species in 89 families of dicots and 133 species in 18 families of monocots were collected and critically examined and compared with the collections in various herbaria in the light of numerous monographic works on various taxa.

A list has been prepared in which each species has its valid name with a list of important synonyms and references. In addition, a short description, ecological and phenological data, occurrence in the area and distribution in other regions, and the local economic uses have been given. Critical notes on the status of the taxon wherever necessary are also appended.—P.V. Bole & N.Y. Das, St Xavier's College, Bombay.

Research Papers

CHANDRA, K. (NPL, New Delhi)—A proposed cavity for double gap interaction in klystrons. *J. Instn Telecom. Engrs*, **10** (3-4) (1964), 123-129.

SHARMA, S.K. & MALHOTRA, G.L. (NPL, New Delhi)—Some observations on structural transformations of Ag_2Se alloy films. *Phys. Letters*, **9** (3) (1964), 218-219.

SAHA, A.K. & MAHAJAN, K.K. (NPL), New Delhi)—D and F-region effects on cosmic radio noise absorption following nuclear detonations. *J. atmos. terr. Phys.*, **20** (1964), 618-624.

MAJUMDAR, S.K., KRISHNAKUMARI, (MISS) M.K. & KRISHNARAO, J.K.—Malathion as a repellent for rats. *Curr. Sci.*, **33** (1964), 212.

VIJAYAVALLI, (MISS) R., VASUDEV RAO, P.V. & UDUPA, H.V.K. (CECRI, Karaikudi)—Further studies on plante plate formation using nitrate as forming agent. *Bull. electrochem. Soc. India Sect.*, **13** (1964), 72.

NARAYANAMURTI, D., KRISHNAMURTHY, G.S. & RAGHUNATHA RAO, D.M. (IPIRA, Bangalore)—A note on wood adhesives based on cashew kernel testa tannins. *Paintindia*, **14** (1964), 43.

GUPTA, C.L. & RAYCHAUDHURI, B.C. (CBRI, Roorkee)—Thermal circuit analysis of unconditioned building. *J. Instn Engrs India*, **44** (2) (1963), 29-46.

KHURANA, R.G, WADIA, M.S., MHASKAR, V.V. & SUKH DEV (NCL, Poona)—On lac acids. *Tetrahedron Letters*, No. 24, 1964, 1537.

KAPADIA, A.H. & SUKH DEV (NCL, Poona)—The diterpenoids of Erythroxylon monogynum : Part—I Monogynol. *Tetrahedron Letters*, No. 19, 1964, 1171.

(*Contd from p. 1, col. 3*)

DR S. MUKHERJEE, Scientist, IIBEM, Calcutta—member, Sub-Committee on the Taxonomy of Vibrios of the International Committee on Bacteriological Nomenclature of the International Association of Microbiological Societies.

DR N.K. PANIKKAR, Director, Indian Ocean Expedition, New Delhi—member, Board of Animal Husbandry Research of the Indian Council of Agricultural Research, New Delhi.

DR Y. NAYUDAMMA, Director & SHRI M. A. Ghani, Scientist, CLRI, Madras—Principal and alternate members respectively, Technological Sub-Committee, Indian Central Arecanut Committee, Ministry of Food & Agriculture.

DR H.A.B. PARPIA, Director & SHRI V.S. Govindarajan, Scientist, CFTRI, Mysore—Principal and alternate members respectively, Technological Sub-Committee, Indian Central Arecanut Committee, Ministry of Food & Agriculture.

SHRI S.K. CHOPRA, Scientist, CBRI, Rookee—representative, Committee of experts to recommend measures of repairs for structural stability of the monument Kutub Minar, Ministry of Education.

ISI Nominations

SHRI B. K. SHUKLA, Scientist, CSMCRI, Bhavnagar—alternate member in place of Shri V.S. Rao, Alkalis and Chloride Committee and Panel for Salt & Marine Products.

DR A. GHOSAL, Scientist, CSIR, New Delhi—member, Panel for sampling of coke.

SHRI R. N. SINGHAL, Scientist, CMERI, Durgapur—member, Oil Expellers and Allied Oil Mill Machinery Sectional Committee.

SARVASHRI V. VENKATARAMAN & M. P. KUMARASWAMY, Scientists, CMERI, Durgapur—Principal and alternate members, Surface Roughness Sub-Committee.

SHRI RAM PRASAD, Scientist, CSIO, Chandigarh—member, Composition of Materials and Components for Instruments Sub-Committee.

PATENTS

Filed

94216 : *Hydrazine derivatives of pharmacological interest*—R.S.Varma & G.S. Sidhu, RRL, Hyderabad.

93575 : *A method to avoid cracking and warping of tiles made from plastic soils*—L.C. Jain, R.B Hajela & N.K. Srivastava, CBRI, Roorkee.

93764 : *Portland cement without gypsum*—D.K. Nath & D. Lahiri, University Colleges of Science & Technology, Calcutta.

94766 : *Improvements in or relating to the preparation of Jatamansi root oil and the isolation of a coumarin constituent therefrom*—I.R. Unni, M.L. Maheshwari, S.K. Panikar & S.C. Bhattacharyya, NCL, Poona.

94767 : *An improved cast iron pot for the melting and holding of non-ferrous molten metal in general, aluminium and zinc in particular*—M.J. Shahani, NML, Jamshedpur.

94768 : *An improved device for the isolation of dross in molten metallic baths during continuous hot-dip processing of strip or wire*—M.J. Shahni, NML, Jamshedpur.

94769 : *An improved device for the continuous hot-dip coating of metallic strip and wire*—M.J. Shahni, NML, Jamshedpur.

94864 : *A process for production of puffed pulses*—K.E. Eapen & P.K. Ramanathan, CFTRI, Mysore.

94932 : *A solvent extraction process for the production of diesel oils and illuminants from primary coal tar and petroleum fractions*—S A. Qader, (Mrs) Aziz Mirza, M.A. Masood & R. Vaidyeswaran, RRL, Hyderabad.

94933 : *Continuous process of the disproportionation of alkyl benzenes*—G.S. Bhargava, Pierre Duhaut, Mohan Lal & Nirmalya Ray, IIP, Dehra Dun.

Canada

902820 : *Processing of mammalian intestines*—S.K. Barat, CLRI, Madras.

U.S.A.

360092 : *Processing of mammalian intestines*—Sisir Kumar Barat, CLRI, Madras.

U.K.

30135 : *Direct preparation of wax esters by fatty acids hydrogenolysis*—A. J. Pantulu, K.T. Achaya, G.S. Sidhu & S.H. Zaheer, RRL, Hyderabad.

Finland

1489/64 : *Processing of dry ready-to-wet sausage casings from cattle, goat, sheep, pig and other mammalian intestines*—S.K. Barat, CLRI, Madras.

Accepted

85788 : *A process for the preparation of a catalyst for the manufacture of maleic anhydride*—R.T. Thampy, S.K. Bhatnagar & B.S. Trehan, Shri Ram Institute for Industrial Research, Delhi.

87435 : *Dyeing of wool, hair and other keratinous fibres into a fast non-bleeding jet black shade*—S.K. Braat, CLRI, Madras.

DR P. S. GILL, Director, CSIO, Chandigarh—member, Composition of the Industrial Instruments Sectional Committee.

DR K.S.G. DOSS, Director, CECRI, Karaikudi—Chairman, Electroplating Chemicals Sectional Committee.

* * *

SHRI G. R. PARKHI, Scientist, Indian National Scientific Documentation Centre, New Delhi who was deputed to study and observe the working of documentation centres and scientific libraries in the USSR under the Indo-Soviet Cultural Exchange Programme returned to India after three months stay in that country. During this period, he worked in the VINITI (All Union Institute for Scientific and Technical Information), Academy of Sciences of the USSR and visited 20 other organisations in Moscow and Leningrad.

Doctorate Awards

SHRI A. V. RAMA RAO, Senior Research Fellow, NCL, Poona—Ph.D. (Bombay University); thesis : *The structure of cycloarticarpin and synthetical experiments on flavones, including flavones with potential chemotherapeutic properties.*

SHRI M. V. RAMAN RAO, Scientist N C L, Poona—D. Sc. (Andhra University).

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CSIR NEWS

VOL. 14 SEPT. 14, 1964 : BHADRA 23, 1886 NO. 17

GOVERNING BODY & BOARD MEETINGS

A meeting of the Board of Scientific and Industrial Research will be held in Parliament House, New Delhi on September 28, 1964 at 5.15 p.m. Shri Lal Bahadur Shastri, Prime Minister and President, CSIR will preside.

A meeting of the Governing Body will be held in Parliament House, New Delhi on September 29, 1964 at 5.15 p.m. Shri Lal Bahadur Shastri, Prime Minister and President, CSIR will preside.

A meeting of the Committee of the Board and Governing Body will be held in the Conference Room of the CSIR Secretariat, New Delhi on September 26, 1964 at 3 p.m. Shri P.A Narielwala will preside.

A meeting of the Finance Sub-Committee will be held in Room No. 134, North Block, Central Secretariat, New Delhi on Sept. 26, 1964 at 10 a.m. Shri T.T. Krishnamachari, Union Finance Minster, will preside.

A meeting of Executive Council of NPL, New Delhi will be held on Oct. 1, 1964 at the Laboratoy at 10-30 a.m. Dr A. Ramaswamy Mudaliar, Chairman Executive Council, will preside.

A meeting of the Executive Council of NAL, Bangalore will be held on Oct. 9, 1964.

SEMINAR

The Silk & Art Silk Mills' Research Association (SASMIRA), Bombay is organising a seminar on *Wet Processing of Silk & Man-made Textiles* during Oct. 9-10, 1964 at the SASMIRA Auditorium. The seminar is being organised with a view to acquaint the personnel engaged in the trade and industry with the latest trends in wet processing of silk and man-made textiles. Various aspects of dyeing, bleaching, finishing and printing of man-made textiles and their blends including their technical service problems will be discussed.

CLRI Demonstration of Process

Practical demonstration of the process *Retan side leathers from buffalo hides*, developed by the Central Leather Research Institute, Madras will be held at the Institute during Sept. 21-Oct. 6, 1964.

Collaboration in Science and Technology between India and U.A.R.

An agreement was signed between the Governments of India and the U.A.R. for close collaboration between the two countries in the fields of science and technology. Shri M.C. Chagla, Union Minister of Education and Vice President, CSIR and Mr. Ahmad Riad Tourky, the U.A.R. Minister of Scientific Research signed the agreement on behalf of the two Governments. This agreement provides for exchange of scientists and technologists, their placement for research and training, and financial obligations of the two Governments on a mutual and reciprocal basis.

The agreement also includes grant of fellowships to scientists and advanced students of technology, import and export of scientific equipment and exchange of literature and publications between scientific documentation centres, libraries and museums in India and the U.A.R.

With a view to giving effective shape to the collaboration programme, a joint Scientific Board would be set up. The Vice-President of the Council of Scientific and Industrial Research, Government of India, and the U. A. R. Minister of Scientific Research will be the Presidents of the Board in alternate years.

Bhatnagar Memorial Awards for Scientific Research

The Shanti Swarup Bhatnagar Memorial Awards for the year 1962 have been announced. Dr. Vikram A. Sarabhai of Physical Research Laboratory, Ahmedabad and Prof. B.K. Bachhawat, Professor of Neurochemistry, Christian Medical College, Vellore are the recepients of the awards in the fields of Physical and Biological sciences respectively. The awards for Chemical and Engineering sciences have been made to Dr S.C. Bhattacharyya of National Chemical Laboratory, Poona and Shri M.M Suri, Director, Central Mechanical Engineering Research Institute, Durgapur respectively.

Dr S. Husain Zaheer

Dr S. Husain Zaheer, Director-General, Scientific and Industrial Research visited the NAL, Bangalore on Aug. 24, 1964 and laid the first pan of concrete for the foundations of the staff quarters, and Structures and Materials Laboratory at Kodihalli.

Dr M.S. Iyengar

Dr M.S. Iyengar, Officer on Special Duty, Defence Science Organisation, New Delhi has been appointed Director, Regional Research Laboratory, Jorhat, Assam. He took charge on Aug. 7, 1964.

Shri B.S. Kesavan

Shri B.S. Kesavan, Director, INSDOC and Publications and Information Directorate, New Delhi has been appointed Honorary Adviser for Library Science in the Union Ministry of Education.

STAFF NEWS

Appointments

DR BHAGABAT PANDA, Pool Officer—Scientist C, CFTRI, Mysore (Aug. 28, 1964).

(*Contd on p. 4, col. 1*)

BRIEFS

Bleaching Earths and Active Carbons

A two day seminar on *Bleaching Earths and Active Carbons* was inaugurated at the Regional Research Laboratory, Hyderabad by Dr M. Chenna Reddy, Minister for Finance and Industries, Government of Andhra Pradesh, on Aug. 11, 1964. Forty research and technical papers covering fundamental and applied aspects of bleaching earths and active carbons were discussed in six sessions. Nearly seventy delegates from all over India representing Research and Educational Institutes, the producers and the consumers of the materials participated. The discussions centred around the problems relating to the improvements that can be effected with respect to the processes of manufacture and utilization of bleaching earths and active carbons. It was noted that while a good start has already been made in the establishment of the industry in the country, there was still ample scope for further exploitation of the Fuller's earth deposits abundantly available in the country and for the production of certain special types of carbons which are still being imported into the country.

IIP Special Training Courses

Prof. Humayun Kabir, Union Minister for Petroleum and Chemicals inaugurated the post-graduate courses in petroleum technology at the Indian Institute of Petroleum, Dehra Dun on Sept. 5, 1964. The 15 month courses impart training in petroleum refining and utilisation of petroleum products in engines. The training programmes are oriented to the practical needs of the petroleum industry. A major part of the courses will be devoted to applied calculations and laboratory practical projects related to refinery practice. The courses will be conducted and supervised by the members of the staff of the Indian Institute of Petroleum, French experts working at the Institute and also experts from the petroleum industry.

Eighteen persons are receiving training at the Institute—eight in Petroleum Refining and ten in Utilization of Petroleum Products in Engines.

ESSO Fellowship at IIP

ESSO India has sponsored a fellowship at the IIP, Dehra Dun. The fellowship, worth Rs. 7,500 covers the full expenses of a student for the Institute's first 15-month course in Petroleum Refining and Utilization of Petroleum Products in Engines.

Horizontal Tensile Testing Machine

A testing machine, acclaimed to be the biggest tensile testing machine in Asia, has been procured by the Central Mining Research Station, Dhanbad, under the United Nations Special Fund Aid Programme for augmenting existing research and testing facilities. Only six such equipment are being used in other parts of world.

The machine has a bed length of 9 m. which can be further extended if required, and is capable of testing hemp and wire-ropes and chains of many sizes. With suitable grips it could be employed to test couplers and ship anchors up to a maximum load of 500 tons.

Radio Propagation Unit, NPL

The progress report of the Radio Propagation Unit, NPL, New Delhi for the years 1961-63 has been brought out. This report (pp. 105) is the fifth in the series, and summarises the work carried out in the units of ionospheric physics, radio propagation service, aeronomy, radio astronomy, space research, interdisciplinary projects, special projects, international activities, RPU-IQSY Programme. The publications have been listed in the end.

Visitors

Prof. Rolf Landsberg of the Humboldte University, Berlin visited the CECRI, Karaikudi on Aug. 13, 1964 and delivered a lecture on 'Decomposition of alkaline permanganate'.

Prof. J.E. Rowe, Professor and Director, Electron Physics Laboratory, University of Michigan, visited the CEERI, Pilani, and delivered a series of lectures on Microwaves on Aug. 24-25, 1964.

Dr. Ahmed Riad Tourki, Minister for Scientific Research, U.A.R. visited the CRRI, New Delhi on Sept. 8, 1964.

CMRS, Dhanbad—A view of the Horizontal Tensile Testing Machine

RESEARCH PROGRESS

National Laboratory

CMRS, DHANBAD

Mine Working & Mining Methods: A Model Study—Mine working being a hazardous occupation, full investigation into various aspects of mine working and mine planning has been undertaken. A three-dimensional model of mine strata in-situ is being set up, using artificial rocks having properties similar to the rocks encountered while working in the mines.

The physical properties of mine rocks, and the suitable composition and physical properties of the material of construction of the model, which is a mixture of sand, gypsum and quick lime, are being determined. An instrument has been fabricated to determine the strength of this material. This instrument has been found to be suitable for determining compressive and tensile strengths of artificial rocks within 0.40 kg.—0.06 kg.

The instrument has a proving ring attached with dial gauge and fixed on adjustable base with ball and socket arrangement on the upper end. The specimen for compression tension or sheering is placed between two rocketted plane discs. The lever beam initially just rests on the top ball exerting nominal load. On filling the attached bucket slowly with water, pressure is exerted on the ball. The load coming on the specimen is directly noted in terms of deflection from dial gauge attached. The flow of water provides a provision for controlling the rate of straining also.

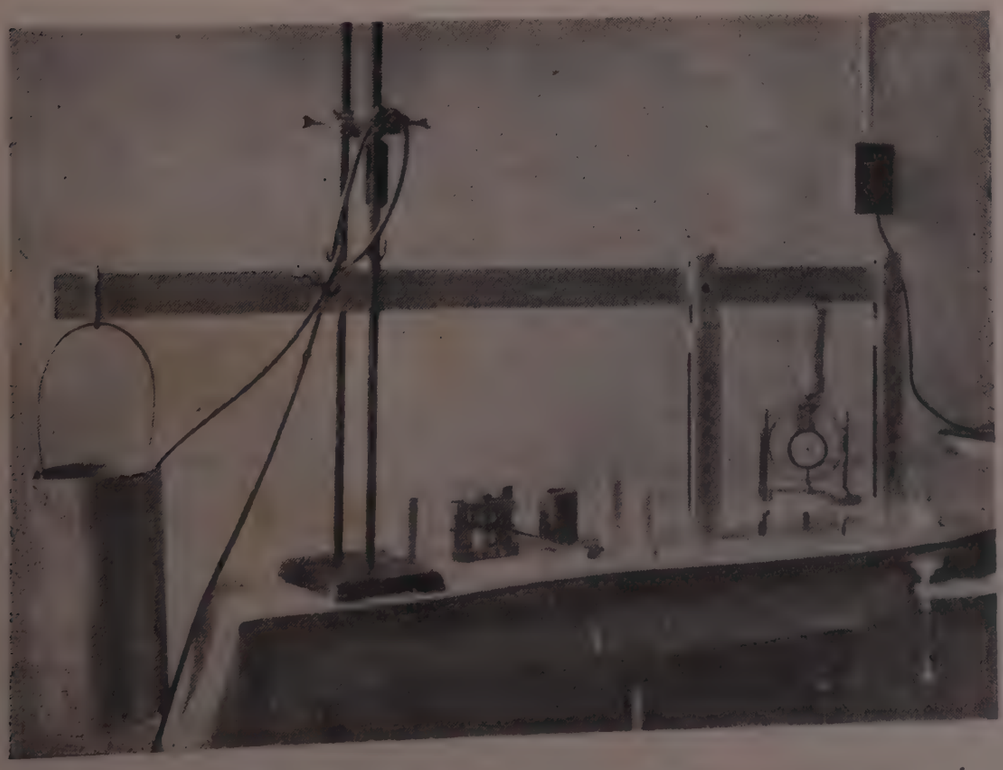
The proto-type model will facilitate research and investigation on various problems like, development of stresses and strains ; dimensions of mine openings ; selection of support ; methods of working ; and extent and nature of ground movements.

Sponsored Research

Medical Climatology—The project was taken up to make a study of the casual and promotive effects of the several climatic and weather factors like temperature, humidity and wind on the tropical diseases like malaria, cholera, typhoid and small-pox. The object of the investigation is to examine if any relationship could be derived between climatic factors and human diseases not only in respect of geographical and seasonal distribution but also the periodicities if any. Such investigations apart from their academic interest are extremely useful to the Public Health Departments to take timely preventive measures in eradicating the ailments.

The first and the most important step in this direction would be a thorough study of the climates of different regions in India and the neighbourhood with special reference to their biological significance. The necessary climatic data of 250 stations in India and their vicinity were collected and bioclimatic maps were prepared for both summer and winter separately according to the classification of Dr Lee. The results have been incorporated in a research paper entitled "Bioclimatic Classification of India and the Neighbourhood with special Reference to its Significance for Human Comfort" published in the *Indian Journal of Medical Research*, **13** (1962), 299-304.

The work relating to the classification of climates for specially studying the incidence and prevalence of communicable diseases such as malaria, cholera, typhoid, small-pox, leprosy, is under way—K. Sivaramakrishnaiah, Department of Geophysics, Andhra University, Waltair.



CMRS, Dhanbad—Apparatus for determining strength of artificial rocks

Research Papers

MAJUMDER, S.K. & ATHIA BANO (CFTRI, Mysore)—Toxicity of calcium phosphate to some pests of stored grain. *Nature, London*, **202** (4939), (1964), 1359.

KRISHNASWAMY, M.A. & LAHIRY, N.L. (CFTRI, Mysore)—Microbiological examination (hygienic status) of market meat. *Indian J. Pub. Hlth*, **8** (3) (1964), 105.

KRISHNASWAMY, M.A., KADKOL, S.B., VENKAT RAO, S., REVENKER, G.D. & SURESHCHANDRA, K.C. (CFTRI, Mysore)—A cheese-like product from fish. *J. Fd Sci. Technol.*, **1** (1), (1964), 1.

RAWAL, B D. & GODBOLE, S.H. (CPHERI, Nagpur)—Epidemiology of water borne infections hepatitis in a locality in Poona. *Indian J. med. Sci*, **18** (1964), 439-44.

STAFF NEWS

(*Contd from p. 1, col. 3*)

DR S.M. GUPTE, Pool Officer—Scientist C, CFTRI, Mysore (Aug. 30, 1964).

DR P.B. RAMA RAO—Pool Officer, CFTRI, Mysore (Aug. 19, 1964).

Promotions

SHRI L.V. KANNAN, Scientist A—Scientist B, CDRI, Lucknow (June 19, 1964),

DRS C.W. BROACH & K. KAR, Scientists A—Scientists B, CDRI, Lucknow (June 25, 1964).

SHRI S.R. DAS, Senior Scientific Assistant—Scientist B, CDRI, Lucknow (July 1, 1964).

SARVASHRI PUTTA VEERRAJU & J.R. IYENGAR and DRS R. RADHAKRISHNA MURTY, S. VENKAT RAO B. RAMAKRISHNA BALIGA & J.V. SHANKAR, Scientists A and SHRI A.V. VENKATESAM, Senior Scientific Assistant—Scientists B, CFTRI, Mysore (September 1, 1964).

* * *

SHRI B.S. SHARMA, Administrative Officer, CGCRI, Calcutta resumed charge of his duties with effect from Aug. 31, 1964 on completion of his twelve weeks training in the Administrative Staff College of India, Hyderabad.

Resignation

SHRI INDERJIT KHOSLA, Scientist, CMRS, Dhanbad (August 4, 1964).

Deputations

SHRI O.P. RATRA, Senior Technical Assistant, PID, New Delhi attended the Conference on *Shellac in Paints & Varnishes*, organised by the Indian Lac Research Institute, Ranchi, held at Calcutta during Aug. 23-24, 1964.

DR S.N. GHATAK, Scientist, CDRI, Lucknow left for East Germany on Aug. 24, 1964 for training study in the field of Biochemistry of tissues and pathogens in relation to drug action, for a period of one year under the scheme of scholarships offered by the German Democratic Republic.

SHRI R.S. MEHTA, Director, CPHERI, Nagpur and a member, Permanent Steering Committee of the International Conference on Water Pollution Research attended the Second International Conference on Water Pollution Research held at Tokyo during Aug. 24-28, 1964. He was the President for the session on Fresh Water Pollution.

PROF. K. N. KAUL, Director, NBG, Lucknow returned to India on Aug. 19, 1964 after attending the Tenth International Botanical Congress, held at Edinburgh. He also attended a symposium on Seeds, convened by the British Ministry of Agriculture, and worked at the Royal Botanic Garden, Kew for about a month.

DR N.R. SUBRAMANIAN, Scientist, NAL, Bangalore left for France on Aug. 24, 1964 for specialised training in Fluid Mechanics at the Office National d' Etudes et de Recherches Aerospatiales (ONERA), Paris for six months under a Government of India scholarship.

SARVASHRI K.N. RAJU & V. GOPALAKRISHNA left for U.S.A. on Aug. 19, 1964 for training in the Langley Research Centre of the National Aeronautics & Space Administration, for a period of 12 months under the U.N. Special Fund Aid Programme.

* * *

The Girdhari Lal Gold Medal was presented to Shri M. Murali Mohan who stood first among the students of the post-graduate course in Fruit Technology, organised by CFTRI, Mysore.

NOTIFICATION

It is proposed to appoint a Director for the National Physical Laboratory under the Council of Scientific and Industrial Research.

There is no standard form of application. Those who wish to be considered are invited to send a statement to the Director-General, Scientific and Industrial Research. Others who may wish to send nominations for this post may kindly forward their proposals to the Director-General.

All communications will be treated as confidential. Statements and proposals should be received by the Director-General on or before November 1, 1964 at the office of the Council of Scientific & Industrial Research, Rafi Marg, New Delhi-1.

Any further information in this connection may be obtained confidentially from the Secretary, Council of Scientific & Industrial Research.

PATENTS

Filed

93726 : *Improvements in or relating to the manufacture of lime-surkhi mixture from surkhi manufactured in down draught kiln*—N.R. Srinivasan, M.L. Bhatia, R.K. Ghosh & S.R. Mehra, CRRI, New Delhi.

94769 : *An improved device for the continuous hot-dip coating of metallic strip and wire*—M.J. Shahani, NML, Jamshedpur.

95074 : *Improvements in or relating to a new depolariser mix for use in alkaline primary cells*—M A.V. Devanathan, N. Ramaswamy & S. Venkatesan, CECRI, Karaikudi.

95166 : *Synthesis of 1-phenyl-1-tertiaryamino-2-propanones and propanols*—Nitya Anand, CDRI, Lucknow.

U. K.

30314/64 : *Preparation of saturated, unsaturated and hydroxy fatty alcohols by hydrogenolysis*—A.J. Pantulu, K.T. Achaya, G.S. Sidhu & S.H. Zaheer, RRL, Hyderabad.

Accepted

85527 : *Improvements in or relating to a process for the oxidation of hydrocarbons*—R.T. Thampy, M.S. Radhakrishna Rao & B.S. Trehan, Shri Ram Institute for Industrial Research, Delhi.

Printed and published by Shri S. A. Chari, Publications & Information Directorate (CSIR), Delhi 12, at Asia Press, Delhi-6
R.N. 4212/5

CSIR NEWS

VOL. 14 SEPT. 28. 1964 : ASHVIN 6, 1886 NO. 18

MEETING

A meeting of the Executive Council of CDRI, Lucknow will be held in the Institute on Oct. 5, 1964 at 11 a. m. Dr. J. R. Patel will preside.

SYMPOSIA

The following Symposia are being organised by the CPHERI, Nagpur at the Institute during the dates as given below :

1. Evaluation of rural latrine designs (Oct. 28, 1964)
2. Problems in water treatment (Oct. 29 & 30, 1964)
3. Water supply and waste disposal at high altitudes (Oct. 31, 1964).

Committee for Publications on Evolution of Life

A Committee for bringing out a series of publications giving an account of *Evolution of Life in the background of Indian Geology* has been constituted with Dr M. S. Randhawa as *Chairman*, Shri Jagjit Singh, Dr S. P. Raychaudhuri, Dr A.K. Dey, Dr B.P. Pal, Dr M.S. Swaminathan, Dr Vishnu Mittre, Dr Sarange, Dr Satya S. Sarkar, Palaeontologist, Geological Survey of India, Shri Laxman Rao, Shri I. Niazi, Shri G.D. Goswami and Prof. S.N. Hasan as *members* and Shri A. Rahman as *Convener*.

CMERI, Durgapur

The Executive Council of the CMERI met in Durgapur on Sept. 14, 1964 under the Chairmanship of Dr S. Husain Zaheer, Director-General, Scientific & Industrial Research. In this meeting recommendations were made for the establishment of (i) Mechanical Engineering Research and Development Organisation (MERDO) with ten centres in the industrially developing areas for helping industry in day-to day problems with parent cell located at CMERI and (ii) a Hydraulic and Hydro-mechanical Transmission Cell for undertaking research, design and development of hydro-mechanical transmissions including basic research fluid hydrodynamic couplings, torque convertors, hydrostatic and mechanical drives for industrial and transport uses.

Vigyan Pragati : Nehru Commemoration Number

Smt. Indira Gandhi, Union Minister for Information & Broadcasting, released the Nehru Commemoration Number of the Hindi Periodical *Vigyan Pragati* at a function organised at the CSIR Secretariat Building on Sept. 24, 1964. Shri M.C. Chagla, Vice-President, CSIR and Union Minister for Education, presided.

Shri B. S. Kesavan

Shri B. S. Kesavan, Director, Insdoc & Publications & Information Directorate, left for the Hague on Sept.19, 1964 to attend the FID (International Federation for Documentation) Conference held during Sept. 21-26, 1964.

STAFF NEWS

Appointments

SARVASHRI M. SURYANARAYANA SASTRY & S. AHMAD—Scientists B. NAL, Bangalore (Aug. 29 & Sept. 9, 1964 respectively).

SARVASHRI A.K. CHHABRA, A.D. KAGAL & A.K. BHATT—Scientists B, CRRI, New Delhi (Aug. 21, 24 & 26, 1964 respectively).

DR SUSHIL CHANDRA—Scientist C, NPL, New Delhi (Aug. 1, 1964).

SHRI V.N. SHARMA—Scientist B, NPL, New Delhi (July 30, 1964).

Promotions

SARVASHRI P.A. IRANI, Senior Scientific Assistant & V. Gopalakrishna, Scientist B1—Scientist B, NAL, Bangalore (Aug. 29, 1964).

(*Contd. on p. 4, col 1*)

NEW DELHI—Shri M.C. Chagla, Union Minister of Education and Vice-President, CSIR (sitting second from left) and Mr Ahmad Riad Tourky, U.A.R. Minister of Scientific Research (sitting extreme right) signing the agreement for collaboration in Science and Technology between the two countries.

BRIEFS

Meeting

A joint meeting of the Advisory Committees for Hindi Unit and Vigyan Pragati was held on Sept. 18, 1964 at the CSIR Secretariat Building, New Delhi. Shri M.C. Chagla, Minister for Education and Vice President, CSIR presided. The meeting was attended by Shri Bhaktdarshan, Deputy Minister for Education, several Members of Parliament and a few others in addition to the members.

Data Processing Machines for NR Unit

International Computers & Tabulators (I.C.T.) data processing machines using 80-column punch cards have been installed at the National Register Unit, CSIR Secretariat, New Delhi, to facilitate scientific and technical manpower research and selection of personnel.

Corrosion and Its Prevention

The five week refresher course on Corrosion & its Prevention, organised by the CECRI, Karaikudi concluded on Sept. 5, 1964. In all, nine candidates, sponsored by private and government organisations attended the course and were awarded certificates at a formal function held at the Institute on Aug. 31, 1964.

CBRI Abstracts

A new quarterly periodical *CBRI Abstracts* has been started by the Central Building Research Institute, Roorkee. The first number (28 pages mimeographed) appeared in July 1964. The publication aims at quicker dissemination of information about selected items of research being carried out in the Institute and covers only the papers emanating from the Institute.

SASMIRA Annual Report

The Annual Report of the Silk & Artsilk Mill's Research Association (SASMIRA), Bombay for the year 1963-64 has been published. The report (pp. 59) summarises the testing and instrumentation, research and developmental work carried out at the Association's laboratories. The report also includes technical service rendered by the SASMIRA to industry and refresher and training courses organised. There are nine appendices which include among others a list of instruments and machinery, technical service reports issued since 1960/61, research papers published, syllabi of training courses, and Association's membership and representation on various bodies.

CSIR Secretariat, New Delhi—Shri M.C. Chagla, Minister for Education & Vice-President, CSIR presiding over the joint meeting of Advisory Committees for Hindi Unit and Vigyan Pragati.

Soviet Team visits NML & CFRI

The Soviet Team for the Bokaro Steel Plant led by Mr S.V. Goubert, accompanied by Mr K.M. George, Managing Director of the Bokaro Steel Plant spent two days, Sept. 8-9, 1964 at the NML, Jamshedpur and held discussions with Dr B.R. Nijhawan, Director of the Laboratory and other scientists on raw materials' problems for the Bokaro Steel Project covering iron ores, fluxes, such as limestone for steel-making, dolomite, etc. The use of self-fluxing sinter for iron production and the necessity of beneficiation of iron ore and limestone for iron and steel-making was one of the topics for discussions as the Laboratory has done considerable research work and pilot plant scale investigations in the above fields in relation specifically to the application of upgrading and beneficiation techniques developed for the steel industry. The 15 members of the team were also shown round the laboratory and its various pilot plants, such as the Low-shaft Furnace Pilot Plant, Integrated Mineral Beneficiation Pilot Plant, Ferro-alloy Pilot Plant, etc. and evinced keen interest in the research activities of the NML much of which were geared directly for the Indian Iron & Steel Industry's multifarious problems.

The Soviet Team visited CFRI, Jealgora on Sept. 16, 1964 and held discussions for 3 days at the Institute with regard to the supply of coking coal for the Bokaro Steel Plant. The use of sub-standard coking coals in blends with prime coking coals of Jharia coalfield formed the nucleus of these discussions. As a result, the Institute has agreed to carry out further tests on the beneficiation, blending and carbonisation of coals from East Bokaro coalfields in the pilot coal washery and coke ovens at the Institute.

IIP, Dehra Dun—Meeting of the Executive Council of the Institute on Sept. 5, 1964

RESEARCH PROGRESS

National Laboratories

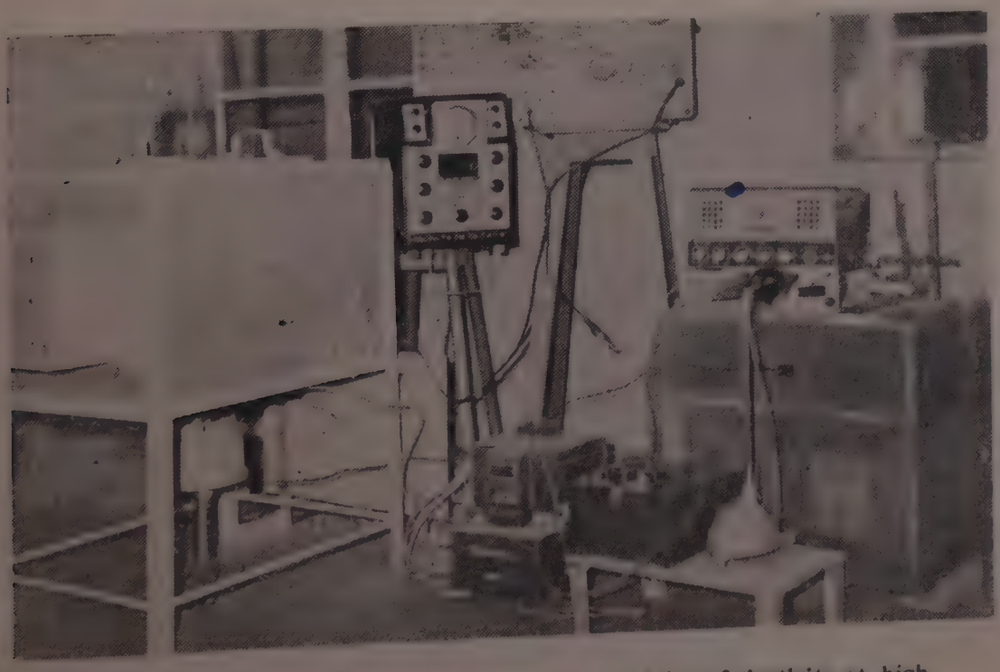
NML, JAMSHEDPUR

Mechanical Properties of Refractories—The study of mechanical properties of refractories at high temperature has gained importance and correlation of such properties with the service performance of the refractories, especially basic refractories used in iron and steel furnaces, have yielded valuable results. While carrying on these studies at the Laboratory, an apparatus has been designed and fabricated for determining the modulus of elasticity at high temperature by a dynamic method. In this method, the resonant oscillation frequency of the refractory specimen (9 in. × 1 in. × 1 in.) when excited in longitudinal, torsional or flexural vibration, is determined by using sound waves in the range from a few hundred cycles to about 20,000 c/s.

The apparatus consists of (i) a silicon carbide resistance furnace that can go up to 1300°, (ii) an audio frequency oscillation for generating frequencies continuously variable between 15 and 50,000 c/min., (iii) a single stage power amplifier, (iv) a vibration generator placed in contact with the specimen, (v) the test specimen supported at its nodal points on two refractory knife edges, (vi) a gramophone crystal pick-up with the stylus placed in contact with the specimen, (vii) a double oscillograph. Thin fused alumina rods are used for making contact between the specimen and (iv) and (v). The frequency generated by the oscillator is varied until a resonance is indicated by a large increase in amplitude, of the pick-up trace. From these rasonance frequencies, its modulus of elasticity at different temperatures is calculated.

CFRI, JEALGORA

Coal as a **Cloud** Seeding Agent—Preliminary investigations have been carried out to examine the possibility of using coal as a cloud seeding agent. The water absorption properties of high rank coal surfaces were compared with those of silver iodide commonly used for cloud seeding and it has been found that high rank coal absorbs more water at higher temperature corresponding to the same relative pressure. The presence of active groups (hydroxyl groups) in coal is found to retain the moisture by hydrogen bonding, thereby confirming the presence of hydrophilic sites in the coal matrix. Some difference in the surface properties of coal and silver iodide in the relative distribution of hydrophilic and hydrophobic sites has been noticed, as estimated by water sorption isotherm and low temperature nitrogen absorption. It is observed that whereas all the active sites in coal are of hydrophilic nature, silver iodide has one such group for every four active sites. Hence pursuing furthur study on the possibility of using coal as a cloud seeding agent seems worthwhile.



NML Jamshedpur—Apparatus for determining modulus of elasticity at high temperatures, fabricated at the Laboratory

CMRS Publications

Research Paper No. 6 : Ref. CMRS-V4/6 (May 1963)—A Survey of Stone Dusting Material in Use in Indian Mines.

Research Paper No. 7 : Ref. CMRS-V5/7 (June 1963)—Ventilation Survey of Mine No. 1.

Research Paper No. 8 : Ref. CMRS-M2/8 (July 1963)—Deformation of Strata at Extraction Perimeter in Board and Pillar Workings—An Investigation.

Research Paper No. 9 : Ref. CMRS-M3/9 (August 1963)—Scientific Tests and Studies on Stowing Materials.

Research Paper No. 10 : Ref. CMRS-H2/10 (January 1964)—Dust problem of a Coal Washery.

Research Paper No. 11 : Ref. CMRS-V6/11 (February 1964)—Scientific Study of Fire in an Indian Coal Mine.

Research Paper No. 12 : Ref. CMRS-V7/12 (March 1964) — A study on the Relative Suitability of Containers for collecting Mine Air Samples.

NCL, Poona : Research Papers

NARAYAN, C.S., KULKARNI, K.S., VAIDYA, A. S., KANTHAMANI, S., LAKSHMI, G., BAPAT, B.V., PAKNIKAR, S. K., KULKARNI, S. N., KELKAR, G.R. & BHATTACHARYYA, S.C.—Terpenoids XLVI. *Tetrahedron*, **20** (1964), 963.

KULKARNI, K.S., PAKNIKAR, S.K. & BHATTACHARYYA. S. C.—Terpenoids—XLVIII. *Tetrahedron*, **20** (1964), 1289.

KULKARNI, G.H., KELKAR, G.R. & BHATTACHARYYA, S. C.—Terpenoids—L. *Tetrahedron*, **20** (1964), 1301.

TANDON, S.G. & BHATTACHARYYA, S.C.—Spot test for the Detection of Vanadium (V). *Analyt. Chem.*, **36** (1964), 1378.

STAFF NEWS

(*contd from p. 1, col. 3*)

DR AKHILESHWAR SINGH, Senior Scientific Assistant — Scientist B, NBG, Lucknow (Aug. 21, 1964).

SHRI S.L. KAPOOR, Scientist A—Scientist B, NBG, Lucknow (Aug. 21, 1964)

SARVASHRI N. SUBRAMANAYAN & S. SAMPATH, Scientists B—Scientists C, CECRI, Karaikudi (Sept. 14, 1964).

SHRI M.V. KUNTE & DR P.M. NAIR, Scientists B—Scientists C, NCL, Poona (Aug. 11, 1964).

Resignations

DR P.C. BOSE, Scientist, CDRI, Lucknow (Sept. 5, 1964).

DR Y.R. SAXENA, Pool Officer, CDRI, Lucknow (Aug. 24, 1964).

Nominations

The following scientists of the CFTRI, Mysore have been elected to the Executive Council of the Association of Food Technologists (India) and hold the posts noted against their names: Dr H.A.B. Parpia—President, Dr B.L. Amla—Councillor, Dr D.S. Bhatia—Chairman of the Editorial Committee. Shri M.R. Chandrasekhara—Executive Secretary, Shri T.N. Ramachandra Rao—Joint Secretary and Shri S.K. Lakshminarayana—Treasurer.

SHRI R.S. MEHTA, Director, CPHERI, Nagpur & DR S.V. GANAPATHI, Officer in charge, Ahmedabad Field Centre—Principal and alternate members, Water Pollution Control Board of the Government of Gujrat.

DR AMARJIT SINGH, Director, CEERI, Pilani—CSIR representative, Birla Institute of Technology & Science, Pilani.

DR H.A.B. PARPIA, Director, CFTRI, Mysore—Member, National Nutrition Advisory Committee, Ministry of Health.

SHRI K. RAY, Deputy Director, National Register Unit, CSIR, New Delhi—Member, General Council of the Institute of Applied Manpower Research, New Delhi, and Department of Business Management and Industrial Administration, Delhi School of Economics, University of Delhi.

DR. B.L. AMLA, Chairman, Industries Research, Consultancy & Extension, CFTRI, Mysore—Member, Development Council for Sugar Industry of the Ministry of Food and Agriculture.

DR C.K. ATAL, Scientist, RRL, Jammu has been elected Sectional President for Pharmacognosy, Indian Pharmaceutical Congress, to be held at Baroda in December 1964.

SHRI M. KURIEN, Scientist, IIP, Dehra Dun—Convener, Working Group on Furnace Oil, Ministry of Petroleum & Chemicals.

PROF. DINESH MOHAN, Director, CBRI, Roorkee—Member, Minerals Planning Group to go into different aspects of industrial use of asbestos based on research work.

DR A.B. BISWAS, Scientist, NCL, Poona—Member, Board of Studies in Physical Chemistry, Indian Institute of Technology, Bombay.

SHRI S.K. MITRA, Scientist, CLRI, Madras—Member, Sub-Committee for Quality Marking in Footwear of the Department of Industries & Commerce, Madras.

ISI Nominations

DR K.S. CHARI, Deputy Director, Central Design & Engineering Unit, New Delhi—Member, Chemical Engineering Sectional Committee,

The following officers of CBRI, Roorkee have been nominated members of the committees noted against their names :

SHRI JOSEPH GEORGE—Aluminium zinc oxide composite primer Committee ; DR S.M.K CHETTY—Timber Engineering Committee & Planning and organisation at sites Committee, SHRI D. R. NARHARI—Soil Construction Committee & SHRI J. S. SHARMA—Output Standards for Building Trade Committee.

Deputations

DR M. GOSWAMI, Scientist, NCL, Poona left for East Germany on Aug. 31, 1964 to study the organic chemical industries/organisations in German Democratic Republic (GDR) for three months, under the Cultural and Science Cooperation Agreement between the GDR and India.

DR L.M. PANT proceeded to France on Aug. 7, 1964 for specialized training in physics for 6-9 months, under a French Government Scholarship.

Doctorate awards

SHRI N.K. KAPOOR, Scientific Assistant, CDRI, Lucknow—Ph.D. (Agra University), thesis : *Effect of physical agents on the chemical activities of living systems.*

SHRI S.S. TAWALE, NCL, Poona—Ph.D. (Poona University) ; Thesis on : *Crystal and molecular structure studies of sodium salts of some α—ketoacids by X-ray diffraction.*

Dr T.N. Khoshoo

Dr Triloki Nath Khoshoo, Head of the Post-graduate Department of Botany, Jammu & Kashmir University, has been appointed Scientist (E) at the National Botanic Gardens, Lucknow with effect from June 24, 1964.

Born on April 7, 1927 at Srinagar, Shri Khoshoo had a brilliant academic record. He passed M.Sc. (Hons) from the Punjab University in First Class and later got the Doctorate. Soon after M. Sc. he joined the Panjab University as a senior lecturer and held this post till May 1962 when he became the Head of the newly created Post-graduate Department of Botany, Jammu & Kashmir University.

Dr Khoshoo has been actively engaged in research both on fundamental and applied aspects of Cytogenetics, Experimental evolution and Biosystematics and has published more than 60 research papers. He has been the recipient of several prizes and the Prince of Wales Gold Medal for his performance in Botany. In 1963, Dr Khoshoo participated in the conference on the 'World Consultation on Forest Genetics and Tree Improvement' held at Stockholm, at the invitation of the FAO and contributed a papper on 'Cytogenetical Evolution in Conifers.

Dr Khoshoo is a Fellow of the Indian Academy of Sciences, Joint Editor of *Silvae Genetica*, International Journal of Forest Genetics and Forest Breeding (West Germany), and is a member of the Council of the Indian Society of Genetics and Plant Breeding.

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CSIR NEWS

VOL. 14 OCT. 12. 1964 : ASHVIN 20, 1886 NO. 19

GOVERNING BODY DECISIONS

The Board and Governing Body of the Council of Scientific & Industrial Research met in New Delhi on Sept. 28 & 29, 1964, respectively. Shri M. C. Chagla, Union Minister for Education and Vice-President, CSIR, presided.

Among the important proposals approved by the Governing Body were : (i) Establishment of a National Biological Laboratory in Punjab, (ii) a Technical Information and Industrial Liaison Centre for the Chemical Industry at Bombay, (iii) taking over of the Shri Ram Institute for Industrial Research, Delhi and (iv) the transfer of the research work of the Oil Technological Research Institute, Anantpur in Andhra Pradesh to the Regional Research Laboratory, Hyderabad and Department of Chemical Technology, Bombay University.

The Governing Body unanimously condoled the death of the late Prime Minister and President of CSIR and adopted a resolution recalling his unique services to the cause of scientific and technological development in the country.

National Biological Laboratory—The site for the Laboratory in Kangra Valley, chosen by the Expert Committee appointed by the Vice-President, was approved by the Governing Body. The Punjab Government is likely to offer about 1300 acres of land as a gift at a place near Palampur. The laboratory will carry out both fundamental and applied work in modern aspects of biological sciences covering the subjects of microbiology, genetics, cell biology, molecular biology, environmental biology, comparative biology, biology of higher animals and human biology. The laboratory is estimated to cost Rs 3 crores.

Technical Information and Industrial Liaison Centre, Bombay—The Centre will serve as a clearing house for dissemination of latest information on research carried out in the field of chemicals not only in the National Laboratories but also in advanced countries. The Centre will arrange for systematic and regular visits of chemical manufacturers and channelise their problems to laboratories for investigation and also serve as a feedback of problems of the industry to the National Laboratories. The expenditure of the Centre is to be shared by CSIR and the Chemical Manufacturers' Association on 50.50 basis.

(Contd on p. 4, col. 1)

Reviewing Committee Report

The report of the third Reviewing Committee of CSIR has been published. The Committee was appointed in 1963 by the late Prime Minister for reviewing the work and progress of the CSIR and to recommend lines on which the activities should be directed in the national perspective. The Committee, consisting of Dr A. Ramaswamy Mudaliar (Chairman), Shri K.T. Chandy, Dr S. Dhawan, Sir Charles F. Goodeve, Sir Patric Linstead, Prof. P.C. Mahalanobis and Dr S.R. Sen Gupta (members),

(Contd on p. 4, col. 1)

PID & INSDOC, New Delhi—Shri M.C. Chagla, Minister for Education and Vice-President, CSIR (second from left) being shown by the Director, Shri B.S Kesavan (extreme right) the publications when he visited the new premises on Oct. 8, 1964.

BRIEFS

Human Relations in Industry

A two-day conference on Human Relations in Industry was inaugurated at the South India Textile Research Association, Coimbatore by His Highness Shri Jayachamaraja Wadiyar, Governor of Madras on Aug. 24, 1964. There hundred and eighty-three delegates from 142 organisations attended the conference.

Popularization of Science in Hindi

The Hindi Unit was created with the idea of developing Hindi as a vehicle for dissemination of scientific knowledge and for communicating such activities of CSIR as are directly related to the economic development of the country. Translation into Hindi of the ten volumes of the Wealth of India : Raw Materials, bringing out of monographs on important industries based on the Industrial Products series of Wealth of India; and low cost publications on popular science subjects were included in the programme of the unit to start with. So far, the Unit has brought out three glossaries containing provisional lists of Hindi equivalent of 4000 titles starting from *Aa* to *Va*. The unit proposes to send these glossaries to specialists for comments and to publish a consolidated dictionary of more than 6000 names after modification based on the comments. The translation of the first volume covering *Aa* to *Aaha* will be taken up after this is done.

A monograph on *Science in Brick making* (pp. 92) has been brought out and monographs on *Leather* and *Coal* are shortly due to be sent to press. Besides, five low-cost publications entitled *Utilisation of Cottonseeds* (pp. 48), *Preservation of Fruits & Vegetables* (pp. 50), *Preservation of Vegetables* (pp. 43), *Tanning Industry* (pp. 68), and *Brick Industry* (pp. 88), have been published by the Unit. Two others, *Domestic fuel and burners*, and *On the Theory of Relativity*, are in the press. It is proposed to bring out 25 such publications during this year.

Meeting

The meeting of the Executive Council of NAL, Bangalore, scheduled for October 9, 1964 is postponed *sine die*.

Active Carbon Plant commissioned at RRL, Hyderabad

A semi-commercial 'Hykol-X' active carbon plant was formally commissioned into operation on Sept 14, 1964 at RRL, Hyderabad by Dr G S. Sidhu, Director of the Laboratory.

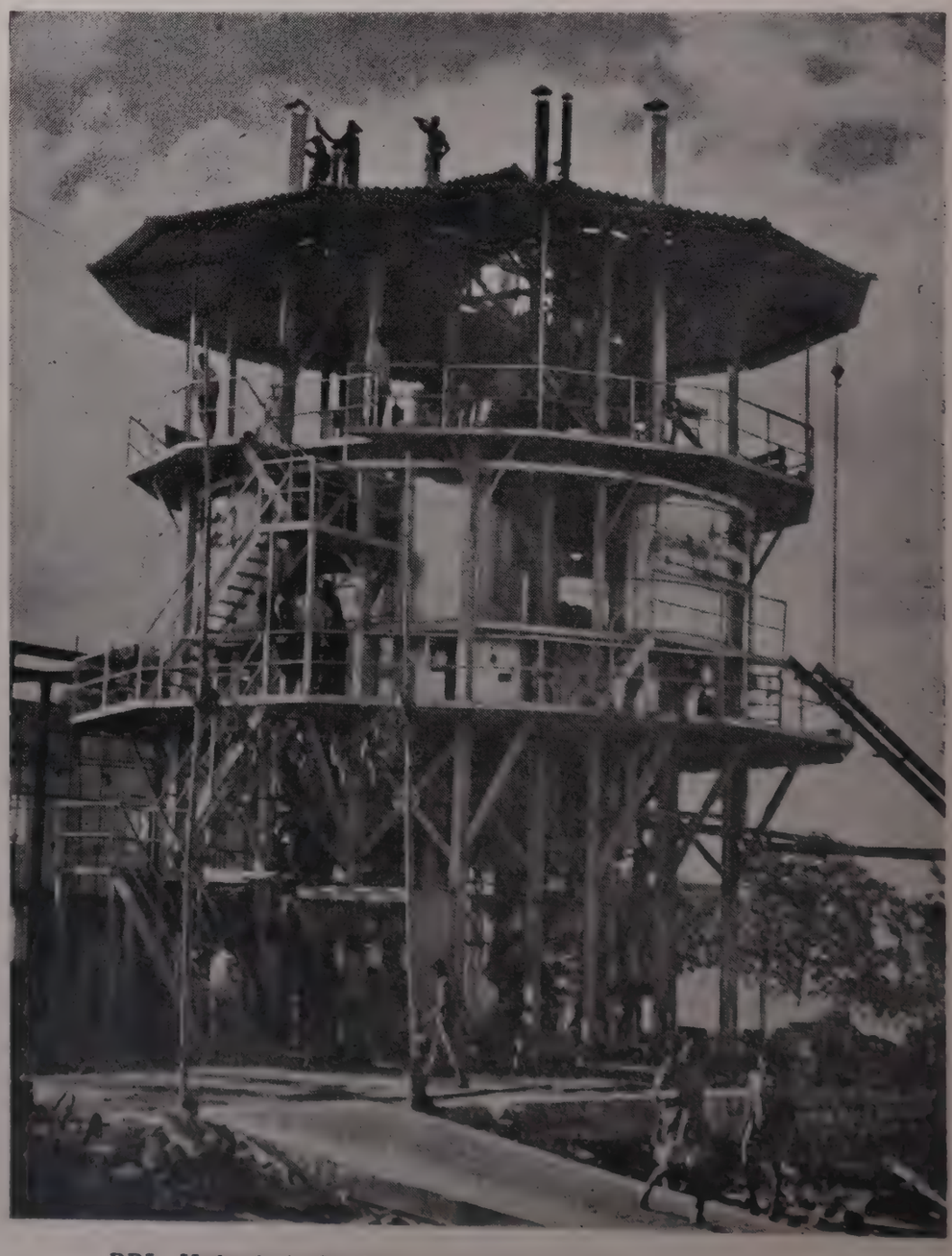
In the first phase the plant will produce 1 tonne of Hykol-X per day and when the plant attains its full capacity during the next 2-3 months it will produce 2 tonnes of Hykol-X per day. Hykol active carbon is produced by steam-activation of semi-coke obtained from the internally heated low temperature carbonisation plant at the laboratory. This is the only plant in India based on coal as the starting material.

This plant was designed by the laboratory and was locally fabricated under the supervision of the laboratory. The design was based on the data collected from the pilot plant of capacity 0.25 tonne of Hykol-X per day, which had been in regular operation for the past 2 years. The Hykol active carbons have been found to be efficient in the decolourisation of vegetable oils, glycerine, sugar and chemical and pharmaceutical solutions.

The plant is financed by The National Research Development Corporation, New Delhi at a cost of Rs. 15 lakhs and the product from this plant is expected to save a foreign exchange equivalent of Rs. 12 lakhs per annum.

* * *

Prof Mehdi Barkechli, Professor of Physics, Tehran University, visited CBRI, Roorkee on Aug. 12, 1964.



RRL, Hyderabad—Semi-commercial 'Hykol X' active carbon Plant

RESEARCH PROGRESS

National Laboratories

IPIRA, BANGALORE

Particle Boards from Groundnut Shells—Particle boards were made using groundnut shells using UF, P.F and CNSL—F resins. The boards were tested for strength and moisture absorption and the results were found to compare favourably with the results reported by the Tropical Products Institute. Further work is envisaged in view of the satisfactory results—B. Narayanamurti, G.S. Krishnamurthy, M.S. Mukunda & D.M. Raghunatha Rao.

Survey & Planning of Scientific Research Unit, New Delhi

Investment in Scientific and Technological Research during the Fourth Five Year Plan is the subject of a working paper (pp. 30) brought out by Dr S. Husain Zaheer, A. Rahman and N. Sen. The paper has been based on two previous studies on Government Expenditure on Scientific Research and Trend of Research Expenditure in the National Laboratories, carried out by the Survey & Planning of Scientific Research Unit of CSIR. The rate of growth of expenditure has been projected to the end of the Fourth Five Year Plan under four parts : Expenditure by (i) the Central Government (including the Railways and Defence Ministries), (ii) State Governments, (iii) Central and State Governments for research in universities, and (iv) organized industry. The data for the projections for (i) have been made from the budget grants (capital and recurring) during 1964-65 which give the actuals for 1962-63 and the actuals for 1957-58. Most of the projections for the Central Government sectors have been based on the 'Demands for Grants' for the years 1959-60 and 1964-65. The expenditure data include the Ministries of Agriculture, Health, Education (including CSIR), Irrigation and Power and the Department of Atomic Energy.

The projections under (ii) have been made on the following assumptions : (a) Increase of 50 per cent over the 1962-63 figures by the end of the Third Five Year Plan and subsequent increase at the rate of 15 per cent per annum in the case of agriculture and veterinary subjects ; (b) doubling of current expenditure by 1965-66 and subsequent growth rate of 35 per cent in the case of industry ; and geological survey, (c) 20 per cent of total medical and public health expenditure as the research expenditure in 1962-63 and projecting the expenditure as in (b).

The projections under (iii) have been made on the following assumptions: (a) number of teachers engaged in research as 4000 by the end of the Third Plan ; (b) doubling the number by the end of 1970-71 ; (c) expenditure of Rs. 10,000 per teacher at the beginning of the Fourth Five Year Plan and a growth of 10 per cent per annum.

The projections for research expenditure by organized industries have taken into account the following assumptions : (a) an average of one per cent of the value added in different branches of the industry as given in the Planning Commission's estimate of capacity production, value of output and value added in organised industries in India 1960-61 to 1975-76.

On the basis of these assumptions, projection of expenditure under the various heads have been given in 14 tables for the years 1963-64 to 1970-71 and also the actual expenditure in 1962-63 from which the projections have been made. Tables pertaining to per capita research expenditure and per capita national income in various countries and projection of national income, gross national product, public consumption and population in India during the Fourth Five Year Plan and projection of certain ratios and percentage during the Fourth Five Year Plan are included. From the table summarising the projection of total investment for research and development during the Fourth Five-Year Plan, it is clear that during 1966-67, the total expenditure has been calculated at Rs. 1260.4 millions which progressively increases to more than sevenfold to Rs. 8897.2 millions in 1970-71. Of this total, the maximum percentage goes to the Central Government (other than railways, defence and universities) of 62.7 per cent (capital 19.0 and recurring, 43.7 per cent), defence, 8.7 (capital 3.5 and recurring 5.2), state governments, 8.3, universities, 4.4, organized industries, 14.8 and railways 1.1 per cent.

Research Papers

SHUKLA, R.N., KULKARNI, S.B., GHARPUREY, M.K. & BISWAS, A.B. (N C L, POONA)—Retardation of water evaporation by the monolayers of octadecyl alcohol and of its condensation products with ethylene glycol. *J. appl. Chem.*, **14** (1964), 236.

GHATGE, N.D. (NCL, POONA)—Cation exchange resins as catalyst in the preparation of polyesters. *J. appl. Polym. Sci.*, **8** (1964). 1305.

GHATGE, N.D. & PHADKE, V.B. (NCL, POONA)—Cyanuric chloride, Sodium carbonate as blowing agent in rubber and plastics. *J. appl. Polym. Sci.*, **8** (1964), 1297.

PAKNIKAR, S.K., NARAYANAN, C.S., KULKARNI, R.S. & BHATTACHARYYA, S.C. (NCL, POONA) – The absolute stereochemistry of the sesquiterpene ketone valeranone. *Tetrahedron Lett.* No. 23 (1964), 1443.

SRIVASTAVA, R.D. (CBRI, ROORKEE) Planning primary schools—*Indian Archit.*, 6(9) (1964), 22-34.

CHARI, M.S.R. (NPL, NEW DELHI)—The Lorenz parameter in high-purity metals at helium temperatures. *Proc. Phys. Status Solidi*, (1964), K 111-K 115.

PANCHOLY, M. & SINGLE, S.P. (NPL, NEW DELHI)—Ultrasonic studies in aqueous solutions of acetic acid. *Nuovo Cim.* Series X, **32** (1964), 847-852.

DAS, S.R. (NPL, NEW DELHI)—Foveal increment thresholds in dark adaptation. *J. opt. Soc. Amer.*, **54** (1964), 541-546.

BISWAS, K.R., SHIRKHANDE, K.Y. & LAHIRI, A. (CFRI, JEALGORA)—Integrated planning of low temperature carbonisation plants. *J. Mines Metals Fuel.*, **12** (1964), 11-14.

MAJUMDAR, B.K. (CFRI, JEALGORA)—Hydrogen distribution in coals. *Fuel*, **43** (1964), 78-79.

Governing Body Decisions

(*Contd from p. 1, col. 2*)

Shri Ram Institute for Industrial Research, Delhi—The proposal for taking over of the Shri Ram Institute for Industrial Research, Delhi by CSIR, made by Shri Charat Ram and ratified by a General Meeting of the members of the Institute, was accepted by the Governing Body. The name of the Institute will continue to be Shri Ram Institute for Industrial Research.

Oil Technological Research Institute, Anantpur—The Institute set up in 1951 for carrying out basic and applied research in vegetable oil technology will be taken over by CSIR from the Andhra Pradesh Government. The work, staff and equipment will be transferred to the Regional Research Laboratory, Hyderabad and the Department of Chemical Technology, University of Bombay.

The Governing Body also decided to hold a special meeting of the Board and Governing Body in November to consider the Report of the third Reviewing Committee.

Reviewing Committee Report

(*Contd from p. 1, col. 3*)

observed that excellent researches had been done by the various laboratories and welcomed the policy adopted by the Council in supporting industry to set up research organisations of their own. The Committee also welcomed the policy of the CSIR in locating a number of technical service units such as the Survey & Planning, Research Coordination, Industrial Liaison and Extension Service, Defence Coordination at the Headquarters and of simultaneously decentralising all routine administration. The following are the important recommendations made by the Committee:

(i) A national institute for research in electrical engineering and a research association for paper industry should be set up. (ii) The ratio of applied research to fundamental research in the programmes of the laboratories should be increased. Basic research should be the objective of the universities, whereas applied research and basic objective research should be the main concern of the scientific laboratories of CSIR. Further, since the main source of supply of scientific personnel to man the laboratories has to be the universities, it should be an act of enlightened self-interest on the part of CSIR to help the universities to improve their standards of teaching and research. (iii) There should be a much closer association between the laboratories and scientific and technical personnel engaged in industry than existing at present. (iv) There should be a certain amount of exchange of scientists for short periods between the laboratories and industries so that the users of research can be closely associated with the research in progress. (v) A vigorous policy of associating industries and user organisations in the public and private sector with the formulation, control and guidance of research programmes in the national laboratories should be adopted. (vi) The activities of the Design and Engineering Unit should be strengthened and expanded into an institute with participation by industry. (vii) A much more vigorous policy of helping industry to build up its own research and development organisations should be adopted. (viii) The Executive Councils, Scientific Advisory Committee and the Directors of the research institutes should be given sufficient powers so that these organisations can run more or less autonomously, the Headquarter retaining functions of coordination, liaison, policy formulation and implementation. (ix) Vigorous support shoud be given to the programme of population control in cooperation with the Indian Council of Medical Research. There should be closer cooperation and coordination between CSIR and research organisations dealing with agriculture for increasing agricultural production in the country.

Dr M S. Iyengar

The appointment of Dr Madhur Srinivas Iyengar, Director on Special Duty to the Ministry of Defence (on deputation from CFRI, Jealgora) as Director of the Regional Research Laboratory, Jorhat, Assam has been announced (*CSIR News*, Vol. 14, No. 17, p. 1).

Shri Iyengar (*b.* June 6, 1922), obtained M. Sc. in Chemistry from the Osmania University in 1944. Thereafter he worked on briquetting of Hyderabad coals, under a CSIR sponsored research scheme. In 1945 he was awarded a post-graduate fellowship for training in fuel technology under the late Dr H J. Hodsman at the University of Leeds, U.K., where he worked on the utilization of non-coking Indian coals. In 1948 he was awarded the Doctorate Degree by the University of Leeds for his work on development of a process for upgrading of non-coking coals by briquetting and low temperature carbonizotion.

Dr Iyengar received specialised training in low temperature carbonisation and fractionation of tar and products at Derbyshire Coalito Co., Ltd., British Diesel Oil and Petrol Co. Ltd, Chesterfield, U.K., and Power-Gas Corporation Ltd, Stockton-on-Tes for sometime. Thereafter he joined the British Coal Utilisation Research Association Laboratories at Latherhead, Surrey and worked on the kinetics of combustion and propagation of flame. He also studied the test techniques of low temperature carbonisation and hydrogenation of coals when he visited Germany in 1948-1949. After returning to India in 1949, he took charge of Fuel Division at the then Central Laboratories, Hyderabad, which he organised and developed, initiating work on the survey of Hyderabad coalfields, installation of the Lurgi low temperature carbonisation plant and briquetting plant, etc. In November 1953 he was appointed Assistant Director, at the Central Fuel Research Institute, Jealgora, where he worked on utilization of lignite and other non-coking coals, conversion of non-coking to metallurgical coals, structure and constitution of coal and related fields in coal technology.

Dr Iyengar's services were requisitioned by the Ministry of Defence in October 1962. Here he designed and developed a 30-ton per day capacity vertical kiln plant for the manufacture of cement. The detailed design and fabrication of this plant was completed in a period slightly over three months.

Dr Iyengar has over 60 research papers to his credit.

Printed and published by Shri S. A. Charl, Publications & Information Directorate (CSIR), Delhi-12. at Asia Press, Delhi-6
R.N. 4212/5

CSIR NEWS

VOL. 14 OCT. 26, 1964 : KARTIK 4, 1886 NO. 20

SEMINARS

Fatty Acids—A Seminar on Fatty Acids will be held at the Regional Research Laboratory, Hyderabad-9 during the first week of February 1965. The seminar will be conducted in two broad sessions—academic and industrial. In the academic session research papers covering the latest advances in the field of fatty acids and their derivatives will be presented. The industrial session will consider various aspects of manufacture and utilization of fatty acids, as well as their standards and specifications. Further particulars may be obtained from the Director of the Laboratory.

Electrochemistry—The Central Electrochemical Research Institute, Karaikudi is arranging the fifth seminar on Electrochemistry at the Institute during Jan. 27-30, 1965. There will be seven technical sessions on the following topics: Electrode Kinetics, Electrochemical Equilibria and Electroanalyses ; Electro-organic and inorganic products ; Electrothermics and Electrometallurgy ; Batteries, Electrodeposition and Metal Finishing ; Corrosion ; and Miscellaneous.

CPHERI : Calcutta Zonal Centre

The Calcutta Zonal Centre of the CPHERI, Nagpur has shifted to its new premises at 23, Radha Nath Mukherjee Road (formerly P-11, Mission Row Extension) Calcutta-1 with effect from Sept. 28, 1964.

Service & Maintenance Unit, CSIO

The Service & Maintenance Unit of CSIO at Delhi Polytechnic has now shifted to 1, West Patel Nagar, Delhi-12.

International Biological Programme Unit

An International Biological Programme Unit has been started by the Indian Ocean Expedition at Ernakulam. The Unit is located at Vijaya Allayam, Karikkamuri Cross Road, Ernakulam-1.

STAFF NEWS

Appointments

SARVASHRI R. K. BHANDARI & M. DINAKARAN—Scientists B, CRRI, New Delhi (Sept. 9 & 10, 1964 respectively).

SHRI K. P. GOSWAMI—Scientist B, CFRI, Jealgora (Aug. 6, 1964).

SHRI P. JAGANADHA RAO, Scientist B, NAL, Bangalore (Sept. 16, 1964).

Promotions

SARVASHRI K. G. KRISHNAYYA & T. J. BHADURI, Senior Scientific Assistants—Scientists B, CFRI, Jealgora (Aug. 6, 1964).

SARVASHRI R. N. BOSE, A. K. GANGULY, B. N. BOSE, D. K. SEN SHARMA, P. S. RAO & N. C. SINHA, Scientists A—Scientists B, CFRI, Jealgora (Aug. 6, 1964).

DR L. V. L. SASTRY, Scientist B—Scientist C, CFTRI, Mysore (Sept. 4, 1964).

SHRI M. M. KRISHNAIAH, Scientist A, NCL, Poona—Scientist B, CDRI, Lucknow (Sept. 7, 1964).

SARVASHRI J. S. GADGIL & H. C. ARORA, Scientists A and SARVASHRI M. PARABRAHMAM & N.M. PARSHAD, Senior Scientific Assistants—Scientists B, CPHERI, Nagpur (Sept. 26, 1964).

* * *

SHRI R.C. BISWAS, Administrative Officer, IIBEM, Calcutta—Deputy Secretary, CSIR, Secretariat, New Delhi (Sept. 22, 1964).

SHRI A. N. KUMAR—Scientist C1, NAL, Bangalore (Aug. 17, 1964).

SHRI L. R. A. RAMAN assumed charge as Administrative Officer, IIBEM, Calcutta with effect from Sept. 9, 1964.

Transfers

SHRI J.P. SINGH, Registrar, CSIO, Chandigarh—CFTRI, Mysore (Sept. 15,1964).

SHRI O. P. KHANNA, Administrative Officer, CFRI, Jealgora—Administrative Officer, Mafatlal Industrial Museum, Bombay (Aug. 17, 1964).

SHRI SRI KISHAN, Administrative Officer, CFRI, Jealgora (Sept. 2, 1964).

Resignation

SHRI BASANT SINGH, Scientist, CSIO, Chandigarh (Aug. 22, 1964).

Nominations

DR J.C. SRIVASTAVA, Officer on Special Duty, CSIR—alternate member, Research Committee of the Khadi & Village Industries Commission.

DR B.L. AMLA, Scientist, CFTRI, Mysore—member, Committee of the Khadi & Village Industries Commission.

SHRI B H. KRISHNA, Scientist, CFTRI, Mysore—member, Madras State Advisory Board for Sago Industry.

SARVASHRI V.S. GOVINDARAJAN & M.A. GHANI, Scientists, CFTRI, Mysore—members, Technological Research Sub-Committee of Indian Central Arecanut Committee.

DR H.A.B. PARPIA, Director, CFTRI, Mysore—Vice-President, Executive Committee of the Meals for Millions Association of India.

Nominations ISI

DR K.Y. SHRIKHANDE, Scientist, CFRI, Jealgora—principal representative on Domestic Coke Sub-Committee.

DR G.N. BADAMI, Scientist, CMRS, Dhanbad—member, Fire Fighting Equipment Sub-Committee.

DR H.V.K. UDUPA, Scientist, CECRI, Karaikudi—alternate member, Electroplating Chemicals Sectional Committee.

SARVASHRI K.R. RAMANATHAN & R.C. SAWHNEY, Scientists, Publications & Information Directorate, CSIR, New Delhi—members, Panel for Glossary of Terms for Katha & Vegetable Tanning Materials.

DR A. GHOSHAL, Scientist, Survey and Planning Unit, CSIR, New Delhi—Member, Coal Washeries Panel.

(*Contd on p. 2, col. 2*)

BRIEFS

CIMPO, Lucknow

The Executive Council of the Central Indian Medicinal Plants Organization (CIMPO), Lucknow, at its meeting held on Sept. 18, 1964, recommended for the development of a unit for rose industry, three new commercial units for production of medicinal and aromatic plants and their products (Kerala, Coorg and Assam) and a sales organisation for marketing of crude drugs and essential oils.

Dr K. Ganapati

Dr K. Ganapati, Director, RRL, Jammu holds charge of Drug Factories in Jammu & Srinagar taken over from the Government of Jammu & Kashmir, in addition to his own duties.

Swiss Instructor for CSIO Training School

Messrs Rudolf Nuesch and Christian Wurmli, on deputation from the Swiss Foundation for Technical Assistance, Zurich, Switzerland, joined the Indo-Swiss Training Centre of CSIO, Chandigarh as Instructors with effect from Aug. 12, 1964.

CSMCRI, Bhavnagar

The CSMCRI, Bhavnagar has been recognised as a centre for conducting research leading to degree by the following Universities: Shivaji University, Kolhapur; Gujarat University, Ahmedabad; and Rajasthan University, Jaipur.

Visitors

Messrs Harlow & Thomas, U.N. Experts, visited CSIO, Chandigarh on Aug. 10, 1964.

Shri K. Brahmananda Reddy, Chief Minister, Andhra Pradesh visited the Regional Research Laboratory, Hyderabad on Sept. 15, 1964.

Dr Krishnamurty Karamcheti, Associate Professor of Aeronautical Engineering, Stanford University, U.S.A. visited the NAL, Bangalore on Sept. 15, 1964. During his visit, he poured the first pan of concrete for the main block of buildings for the laboratory at the Kodihalli site.

Mr R.K.A. Gardiner, Executive Secretary of the Economic Commission for Africa visited CRRI, New Delhi on Sept. 22, 1964.

Mr P.S. Rawson, Keeper of the Oriental Art Museum at Durham University, Britain visited the BITM, Calcutta on Sept. 24, 1964.

(*Contd from p. 1, col. 3*)

Deputations

Dr P.S. Gill, Director, CSIO, Chandigarh returned from U.S.A. on August 31, 1964 after three months' deputation as a visiting scientist to the National Centre for Atmospheric Research, Boulder.

Dr V.V. Varadachari, Scientist and Shri C. Satyanarayanamurty, Senior Scientific Assistant, Indian Ocean Expedition Physical Oceanographic Centre, Ernakulam, who were deputed to attend an international training course on "Physical Oceanography of Shallow Seas" organised during September 1-17, 1964 at Luntern, Netherlands, returned on September 18, 1964 after successfully completing the course.

Dr N.R. Subramanian, Scientist, NAL, Bangalore participated in the Eleventh International Congress of Applied Mechanics at Munich during August 30-September 5, 1964.

Prof. S.R. Mehra, Director, CRRI, New Delhi attended the Australian Road Research Conference held in Melbourne during Aug. 31-Sept. 4, 1964. After the conference he undertook a Post-Conference Interstate study tour to the Australian Research Institutions, Departments of Main Roads and Rural Roads. He returned to India on Sept. 28, 1964.

Dr Y. Nayudamma, Director, CLRI, Madras left for U.S.A. on Sept. 11, 1964 for discussions and consultations with the U.S. Department of Agriculture on the working of the PL 480 schemes at the Institute and visiting institutions and tanneries in U.S.A. On his way, he attended 'Semine International du Cuir' at Paris. Dr Nayudamma returned to Madras on Sept. 30, 1964.

Sarvashri S B. Deshaprabhu, Production Officer & J.M. Dutta, Scientist, Publications & Information Directorate resumed duty on Sept. 28 & 26, 1964 respectively, on completion of 6 months' advanced training in style editing, book & magazine publishing and production techniques at the Pergamon Press, Oxford and the College of Technology, Oxford, U.K.

Dr S.M.K. Chetty

Dr S.M.K. Chetty, has been appointed Scientist E, CBRI, Roorkee with effect from Aug. 14, 1964.

Shri Chetty (*b.* Nov. 30, 1921) obtained his B.E. (Civil) Degree in 1945 from the Mysore University. Till 1950, he was engaged on various major construction projects and had extensive training in leading consulting engineering and architects' firms. During 1950-1954, he was incharge of the construction of CECRI, Karaikudi, after which he joined CBRI as Scientist A and was subsequently promoted to Scientist B and then to C in 1959. During 1957-59 he attended the Master's Degree Course in Structural Engineering at the University of Roorkee. Immediately after passing, he went on deputation to U.K. during 1959-62 and obtained his Ph. D. Degree from the Southampton University with specialisation in analysis of Anti-clastic Shells. He has wide experience in the fields of prestressed concrete and shell structures. His outstanding contribution is the evolution of a simple method of casting funicular shells. He has done pioneering work in the application of Matrix progression methods to the solution of simultaneous partial differential equations for the case of irregular boundaries. This method of solution has found an application in the analysis of arch dams. In the field of prestressed concrete he evolved a systematic method for the selection and design of prestressed concrete members.

Dr Chetty is an Associate Member of the International Association for Shell Structures and an Associate Member of the Institution of Engineers, India.

Dr K.S. Rajagopalan

Dr Kummittithidan Santhanam Rajagopalan, Scientist C, CECRI, Karaikudi has been appointed on promotion, Scientist E at the Institute with effect from September 3, 1964.

Shri K.S. Rajagopalan, born on October 15, 1923 at Kummattithidal, Tanjore District, Madras, took his B. Sc. (Hons) degree from Andhra University in 1945, M. Sc. (Chem.) from Delhi University in 1946 and the Ph. D. degree from the Delhi University in 1950.

During his service in the Institute from 1952 onward, Dr Rajagopalan has made an intensive study of all aspects of metallic corrosion and its prevention particularly the theory of corrosion potential, action of corrosion inhibitors, kinetics of growth of passivating films on metal surfaces, theory of cathodic

(*Contd on p. 4, col. 1*)

RESEARCH PROGRESS

National Laboratories

NML, JAMSHEDPUR

Al-Mg Alloy for Coinage—In view of the acute shortage of copper and total absence of nickel in India, the laboratory conducted research and developmental work in collaboration with the Government of India Mint at Bombay for developing an alloy for use in lower denomination coinage based on indigenous alloy elements. As a result, an aluminium-magnesium alloy containing 3.5 per cent magnesium was developed which has been found most satisfactory as regards corrosion, tarnish and wear resistance as well as other physical properties and characteristics essential for coinage alloy uses. This has been accepted by the Government of India for lower denomination coinage and the new 3 Paisa coin released on Oct. 1, 1964 is based on this composition.

NML, Jamshedpur—New 3 Paisa coin made of Al-Mg alloy developed at the laboratory

INSDOC, NEW DELHI

A Directory of Indian Scientific Periodicals (pp. 133) has been compiled and published by the Centre. The Directory which contains a total of 725 entries includes periodicals current to the end of 1963 and also annual reports of scientific and technical institutions and other learned societies. The entries have been classified according to the Universal Decimal Classification Scheme. Of these, maximum entries (138) are for Engineering. They are followed by Medical Sciences, 130, Chemical Technology, 60, Manufactures, 45, Botany, 14, Zoology, 14, Mathematics, 11, Agriculture, 12, etc. An alphabetical title index has been given at the end.

Sponsored Research

Coal Blending and Coking Research—Pilot oven tests were carried out with (i) washed Hatnol seam coal, Raniganj coal field in admixture with Jamadoba washed coal, (ii) Talcher seam coal, Orissa coal field in admixture with Dugda washed coal, and (iii) Ghordewa seam coal, Korba Colliery, Madhya Pradesh coal field in admixture with Dugda washed coal. The results have shown that hard coke could be obtained from the blends containing a maximum of 30 per cent of Washed Hatnol seam coal and requisite proportions of Jamadoba washed coal when the blends were selectively crushed to pass 100 per cent through 3 mm. Blends containing a maximum of 20 per cent of Talcher seam coal and requisite proportions of Dugda washed coal selectively crushed to pass 100 per cent through 3 mm. in the 'Sovaco' pilot plant also yielded a hard coke. In the case of Ghordewa seam coal hard coke could be obtained from the blends containing a maximum of 15 per cent of this coal crushed to pass through *c.* 1.5 mm. and requisite proportions of Dugda washed coal selectively crushed to pass 100 per cent through 3 mm. in the 'Sovaco' pilot plant.

Two full scale oven tests were carried out with blends of Argada-Sirka seam coal, South Karanpura coal field in admixture with Tata's Coke Ovens coal mixture to confirm the results already obtained in the pilot plant scale. The results indicated that medium hard coke (Breslau Index 77.3) could be obtained from the blend containing 15 per cent of unwashed Argada-Sirka seam coal and 85 per cent of Tatas Coke ovens coal mixture. These results are in agreement with those obtained from the pilot oven tests.

Full scale oven tests were carried out with blends containing washed Argada coal in admixture with Kargali and Dugda washed coals for the projected Bokaro Steel Plant, Medium hard coke (Breslau Index 78.0, ash 21.9%) was obtained from the blend containing 15% of Argada washed coal, 35% of Dugda II washed coal and 50% of Kargali washed coal, the grain size being 100% through 3 mm. Hard coke (Breslau Index 82.8, ash, 21.5%) was obtained from the blend containing 50% of Dugda II washed coal and 50% Kathara washed coal, the grain size being 100 per cent through 3 mm.

In view of the encouraging results obtained on pilot plant scale, full scale oven test was carried out with blend containing Poniati seam coal, Raniganj coal field in admixture with washed coals from Kargali and Dugda to confirm the results already obtained (in the pilot plant tests). Hard coke (Breslau Index 80.3, ash, 21.9%) could be obtained from the blend containing 15 per cent of Poniati seam coal, 35 per cent of Dugda washed coal and 50 per cent of Kargali washed coal.

Research Papers

CHETTY, S.M.K. & TOTTENHAM, M. (CBRI, ROORKEE)—An investigation into the bending analysis of hyperbolic paraboloid shells. *Indian Concr. J.*, 38(7) (1964), 248-258.

GARG, B.B. (CBRI, ROORKEE)—Solar considerations in planning of buildings for cold climate. *Indian Archit.*, 6(8) (1964), 28-33.

BHATTACHARYYA, P.K., DHAVALIKAR, R.S. & SHUKLA, O.P. (NCL, Poona)—Microbiolgical Transformations of Terpenes: Degradation of Limonene, α -pinene and β -pinene by a Soil Bacterium. *Sixth int. Congr. Biochem.* New York, July 26-Aug. 1, 1964.

(Contd from p. 2, col. 3)

protection and the several new techniques he has introduced in the study of corrosion problems. He has successfully tackled a variety of problems faced by the industry in this country, such as investigations on the cause of corrosion of reinforcements in RCC and RCBW constructions, prevention of corrosion of textile machinery, cathodic protection of steel shutters, influence of environmental factors on marine corrosion, the new vapour phase corrosion inhibitors he has developed and the treatment for the prevention of staining of aluminium sheets.

In 1961, Dr Rajagopalan went to U.K. under the Colombo Plan for training in electrochemical kinetics and corrosion. He spent 9 months in Newcastle University and 7 months in the National Chemical Laboratory, and also toured research centres on metallic corrosion and electrochemical kinetics in U.K.

Dr Rajagopalan is the convener of the CSIR's Committee on Fundamental Studies on Corrosion, member of Indian Standards Institution Panel for Corrosion Research on Light Gauge Steel Structures and Sectional Committee on Metallic Finishes, the Electrochemical Society, U.S.A. and several others. He has published about 50 research papers in Indian and foreign journals.

Shri C.V. Ganapathy

Shri Calicut Venkateswara Iyer Ganapathy Scientist C, NPL, New Delhi has been appointed on promotion Scientist E in the laboratory with effect from July 6, 1964.

Shri Ganapathy, born in 1913 at Kozhikode, had a brilliant academic carrier at the Annamalai University from where he passed M.A. Degree in Chemistry. Later he carried out research work in biochemistry in the Indian Institute of Science, Bangalore and obtained M. Sc. degree of Madras University and Associateship of the Indian Institute of Science. During 1940-1951, Shri Ganapathy had been associated with the Mandalay Brewery and Distillery as Chief Chemist (2 years), Head of the Control Laboratory of the high Explosive Factory at Kirkee (4 years) and National Ekco Radio & Engineering Co., Bombay as a Chief Research Chemist. His association with the electronic industry began when he joined the National Ekco Radio & Engineering Co. where he took three patents and solved successfully many problems connected with component manufacture, particularly tropicalisation procedures and testing of raw materials.

In 1951, he joined NPL as Senior Scientific Officer in the Radio Component Section and was associated with the project on the development of process for the manufacture of radio components from indigenous raw materials. He developed processes for the manufacture of silvered mica, ceramic capacitors and ferrites and has been associated with the setting up of seven manufacturing units for electronic components which has resulted in comprehensive saving in foreign exchange.

Shri Ganapathy has published ten papers on electronic components and is the joint principal author of 14 patents majority of which are being utilised.

PATENTS

Filed

94768 : *An improved device for the isolation of dross in molten metallic baths during continuous hot-dip processing of strip or wire*—M.J. Shahani, NML, Jamshedpur.

95026 : *An improved process for the manufacture of lindane from technical benzene hexachloride (hexachlorocyclohexane) and utilization of the waste products*—S.K. Majumder & J.K. Krishna Rao, CFTRI, Mysore.

95165 : *Synthesis of 1-phenyl2-(&3)-1'--azacycloheptyl-propanones and propanols*—Nitya Anand, CDRI Lucknow.

95182 : *A torque limiting spanner*—P.V. Pawar & N.V. Raman, CBRI, Roorkee.

95305 : *Improvements in or relating to pitch mastic compositions*—C.G. Swaminathan, B.C. Mazumdar & B.S. Mongia, CRRI, New Delhi.

95306 : *Improvements in or relating to soldering of aluminium cables*—B.A. Shenoi, R. Subramanian & Azariah, CECRI, Karaikudi.

95421 : *Improvements in or relating to bright nickel plating*—B.A Shenoi & R. Subramanian, CECRI, Karaikudi.

95422 : *Improvements in or relating to anode material for single shot battery*—P.L. Joseph, M.A.V. Devanathan, B.A. Shenoi & V. Balasubramanian, CECRI, Karaikudi.

95423 : *Improvements in or relating to etching of tantalum*—B.A. Shenoi, K.R. Narasimhan & K.L. Ramachandran, CECRI, Karaikudi.

95424 : *Improvements in or relating to the thermosetting resinous composition*—S.P.R. Nair, M. Krishnan & R.T. Thampy, Shri Ram Institute for Industrial Research, Delhi.

95425 : *Improvements in or relating to the electrochemical regeneration of chromic acid from chromium sulphate and sulphuric acid and use of the same for the oxidation of organic compounds and of p-nitrotoluene in particular to p-nitrobenzoic acid*—H.V. Udupa, M.S. Venkatachalapathy & S. Chidambaram, CECRI, Karaikudi.

95183 : *A device for the heat treatment of articles*—M.K. Balchandani, V.P. Wasan & T.D. Bansal, NPL, New Delhi.

Accepted

87428 : *Improvements in or relating to the decolourization of mineral substances such as clay or sand*—Atma Ram, S. Sen & S. Guha, CGCRI, Calcutta.

83968 : *A method for reconditioning the coated magnesium powders*—V.S. Sampath, G. Basak & P.P. Bhatnagar, NML, Jamshedpur.

85959 : *A reactor for carrying out high temperature reactions involving solids and gases*—K. Seshacharyulu, Y. Venkatesham, D.S. Datar & S.H. Zaheer, RRL, Hyderabad.

Sealed

82190 : *Improvements in the process for the preparation of desiccant from gypsum*—M.R. Ali, M.A. Hai, D.S. Datar & S.H. Zaheer, RRL, Hyderabad.

82192 : *Apparatus for the automatic collection of atmospheric pollen and spores*—P.K.K. Nair & K.N. Kaul, NBG, Lucknow.

83652 : *Improvements in or relating to magnesite refractories*—M.R. Rao, A. Dutt, P C. Sen & H.V.B. Rao, NML, Jamshedpur.

83968 : *A method for reconditioning the coated magnesium powders*—V.S. Sampath, G. Basak & P.P. Bhatnagar, NML, Jamshedpur.

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CSIR NEWS

VOL. 14 NOV. 9, 1964 : KARTIK 18, 1886 NO. 21

SYMPOSIA & MEETING

Microwave Devices and Systems—A symposium on 'Microwave Devices and Systems' is proposed to be held at the Central Electronics Engineering Research Institute, Pilani (Rajasthan) some time towards the end of February 1965. The symposium will provide a forum for discussing the latest trends in the field, with particular reference to achievements made in the country. The following topics are likely to be covered: Microwave Components and Circuits; Microwave Tubes; Microwave Solid State Devices; Microwave Communication Systems; Microwave Radar and Navigation Aids; and Microwave Antennas; and Measurements.

Scientists working in this field are invited to contribute papers and participate in the deliberations. Typewritten abstracts of papers in duplicate (consisting of 250 to 500 words) may be sent to the Director of the Institute before Nov. 15, 1964.

Micro-metallurgy—The role of minute additions to ferrous and non-ferrous metals and alloys. The National Metallurgical Laboratory, Jamshedpur is organising a symposium on 'Micro-metallurgy—the role of minute additions to ferrous and non-ferrous metals and alloys' at Jamshedpur early next year. The scope of the symposium will broadly cover: (1) General theoretical aspects of minute additions to ferrous and non-ferrous metals and alloys; their effects on phase transformations, micro-structure and micro-phases, etc.; (2) Specific ferrous and non-ferrous alloys developed on the basis of micro-additions of certain elements thereto; (3) The scavenging effects of micro-additions to different alloys and resultant metallurgical characteristics conferred thereby, including casting properties for foundry applications; (4) Economics of micro-metallurgy of ferrous and non-ferrous alloys based on the yield figures and overall improvements in production economics; (5) Practical applications of micro-additions considered specifically under Indian conditions in diverse metallurgical fields; (6) The status of micro-metallurgy overseas in relation to the position in general in India; and (8) Qualitative and quantitative methods and physical techniques for identification and estimation of micro-additions, micro-phases and constituents, etc.

* * *

A meeting of the Executive Council of the Central Mining Research Station, Dhanbad will be held at the Station on Nov. 30, 1964 at 9 a. m.

Dr L.C. Verman

Dr Lal C. Verman, Director, Indian Standards Institution and Honorary Adviser on Standardisation to the Govt. of India has been awarded the Leo B. Moore Medal on Nov. 9, 1964 by the Standards Engineers Society (SES), New Providence (New Jersey) at the inaugural session of the Sixth ISO General Assembly in New Delhi. The award of the medal named after Prof. Leo B. Moore of the Massachusetts Institute of Technology, is made for highest achievement, extraordinary contribution, and distinguished service in the field of standardization and its professional advancement through original research and inviting, creative application and development, or professional and public service.

Dr Verman has been associated with CSIR since its inception; he was the acting Director of the Physical Laboratory of CSIR during 1944-1947. He is a member of the Executive Council of NPL, New Delhi, a member of the Radio Research Committee and Electrical & Mechanical Engineering Research Committee of the Council.

Unesco Conference

Shri M.C. Chagla, Union Minister for Education and Vice-President, CSIR, (Leader of Indian Delegation) and Dr S. Husain Zaheer, Director-General, Scientific & Industrial Research (member) left for Paris on Oct. 17, 1964 to attend the Thirteenth General Conference of Unesco which commenced from Oct. 20, 1964. The Conference is held once in two years to lay down the policies of the Unesco and to approve of the programmes of work during the succeeding two years.

Shri Chagla returned to India on Nov. 2, 1964. Dr Zaheer will proceed to U.K. after the Conference (Nov. 19, 1964) for three days to attend to some official work at the U.K. Department of Scientific and Industrial Research and at the Education Department of the High Commission of India, London.

Shri G.D. Joglekar

SHRI G. D. JOGLEKAR, Assistant Director, National Physical Laboratory, New Delhi has been appointed Assistant Director-in-charge of the Laboratory with effect from Oct. 3, 1964, the date of taking over charge from Dr P.K. Kichlu, Director, NPL.

STAFF NEWS

Appointments

SHRI M.P. GUPTA, Scientist B, NCL, Poona (Sept. 26, 1964).

DR (MISS) RAJ MATHUR, Pool Officer, NCL, Poona.

Promotions

SARVASHRI B.V.S.R.A. TILAK & K.C. NARASIMHAN, Senior Scientific Assistants and S. GURUVIAH, Scientist A—Scientists B, CECRI, Karaikudi (Sept. 21, 1964).

SHRI R.N. SINGHAL, Scientist C—Scientist E, CMERI, Durgapur (Aug. 27, 1964).

SHRI B.C. SEN, Pool Officer—Scientist C, CMERI, Durgapur (Aug. 27, 1964).

(Contd on p. 2, col. 2)

BRIEFS

Tanners' Conference at Rajkot

A Tanners' Conference organised under the joint auspices of the Gujarat State Khadi and Village Industries Board and the Central Leather Research Institute, Madras was inaugurated by Shri U.N. Dhebar, Chairman, Khadi and Village Industries Commission at Rajkot on Sept. 2, 1964. Shri Vajubhai Shah, Minister for Cooperation and Rural Development, Government of Gujarat, presided. The conference was attended by many tanners, technologists, organisers and policy-makers of the Khadi and Village Industries Board.

Modern Developments in Technology and Machinery with reference to the Hannover Fair

The proceedings of the Symposium on 'Modern Developments in Technology and Machinery with reference to the Hannover Fair' have been published by the Ahmedabad Textile Industry's Research Association, Ahmedabad. The 67-page publication includes five papers on Modern Development in (i) Spinning machinery and technology; (ii) Preparatory and weaving machinery and technology; (iii) Chemical processing machinery and technology, Part I; (iv) Chemical processing machinery and technology, Part II, and (v) Technology and Machinery with reference to the Hannover Exhibition—management's point of view. These papers are based on the observations of the authors at the Hannover Fair and were read at the symposium organised in December 1963.

CRRI Annual Report

The Annual Report of CRRI, Delhi for the year 1963-64 has been published. The report (pp. ix+87) summarises the progress of research work carried out at the Institute in the following divisions: Soils; Flexible Pavements (Bituminous materials); Rigid pavements (Concrete materials); Roads; Traffic Engineering, Economics and Statistics; and Bridges. Other activities of the Institute such as application of new research techniques in road development projects, technical information, assistance and training, deputation, participation in committees, meetings, symposia, are also included. Information on the functions of the Institute, research staff, new apparatus and equipment, publications and visitors, etc. is given in seven appendices.

Foreign Trainees at CLRI

Mr Abdullahi Hussan Khalifa, FAO Fellow from Sudan, joined the Central Leather Research Institute, Madras on Sept. 18, 1964 for training in tannins utilisation at the Institute for a period of two weeks.

Mr Boonthai Khaokham, a nominee of the Government of Thailand, joined the Institute on Sept. 24, 1964 for training in leather tanning for a period of two years under the Colombo Plan.

Visitors

Dr H.N. Chevoksarov & Mr M.M. Kundyastov, anthropologists from Russia, visited NBG, Lucknow on Oct. 2, 1964.

Dr D. Groger & Dr H. Schutte, Institute of Natural Products of the German Academy of Sciences, Halle, East Germany, visited NBG, Lucknow, on Oct. 26, 1964.

STAFF NEWS

(*Contd from p. 1, col. 3*)

Sarvashri Lakhbir Singh, D.C. Jose, S.K. Kundra & Dr V. Damodaran, Scientists A—Scientist B, NCL, Poona (Sept. 28, 1964).

Sarvashri K. Madhusudan Rao, Senior Scientific Assistant & S.G. Gomkale, Senior Research Fellow—Scientists B, NCL, Poona (Oct. 7, 1964).

Transfer

Shri M.M. Krishnayya, Scientist A, NCL, Poona—CDRI, Lucknow (Sept. 3, 1964).

Resignations

Sarvashri L. S. Tuli, S. L. Aggarwala & Dr C. G. Balachandran, Scientists, CBRI, Roorkee (April 24, Aug. 11 & Nov. 6, 1964 respectively).

Nominations

Dr G. S. Siddappa, Scientist, CFTRI, Mysore—member, Central Fruit Products Advisory Committee of the Ministry of Food & Agriculture (Department of Food).

Dr D. L. Subrahmanyam, Scientist, CEERI, Pilani—member, Senate of Birla Institute of Technology and Science, Pilani.

Prof. S. R. Mehra, Director, CRRI, Delhi—member, Managing Committee of the Indian National Group of the IABSE for the year 1965.

Dr P. S. Gill, Director, CSIO, Chandigarh—member, Board of International Society for Comprehensive Medicine, California.

Shri S. G. N. Swamy, Scientist, CMERI, Durgapur has been selected to be a member of the delegation to represent India at the Fifth Meeting of ISO/TC 79—Light Metals and Their alloys, to be held during Nov. 9-21, 1964 at New Delhi.

Deputations

Dr K. P. Kacker, Scientist, CBRI, Roorkee, attended the Eleventh International Ceramic Congress held at Brussels during Sept. 13-18, 1964 and read a paper on 'Identification of clay minerals in binary and ternary mixtures by differential thermal analysis of dye-clay complexes', in collaboration with Dr V. S. Ramachandran of the Institute.

Dr K. P. Sinha, Scientist, NCL, Poona, attended the International Conference on Magnetron in Nottingham, U. K. during Sept. 7-11, 1964 and read a paper on 'Phonon-magnon relaxation processes in ferrimagnetic systems' (authors : K. P. Sinha & A. W. Joshi). Dr Sinha was a visiting scientist to the Atomic Energy Research Establishment, Harwell during Sept. 14-25, 1964. He also visited the Institute of Physics, Geneva, Switzerland on Sept. 28, 1964.

Sarvashri Narinder Singh & V. Muthukrishnan, Scientists NML Jamshedpur have been deputed to Poland for training in metallurgy for periods of 5 and 8 months respectively under Polish-Unesco fellowship, with effect from Oct. 5, 1964.

Dr G. J. Mohan Rao, Scientist, CPHERI, Nagpur, returned to India on Oct. 4, 1964 after spending a month at the Scripps Institution of Oceanography in La Jolla, California, as visiting scientist.

Doctorate Awards

Shri Rabindra Kumar Sinha, Junior Research Assistant, CSIR scheme, Bose Institute, Calcutta—D. Phil. (Calcutta University) ; thesis : *Microbiological and chemical aspects of antibiotics*.

Shri S. S. Ramachandran Nair, NCL, Poona—Ph.D. (Poona University) ; thesis : *Synthetic macrocyclic musk compounds and allied product* (guide : Dr S. C. Bhattacharyya).

RESEARCH PROGRESS

National Laboratories

CFRI, JEALGORA

Analysis of Fuel and Power Costs in Industries—An economic analysis of the role of fuel and power in major manufacturing industries for the years 1951 and 1958 has been made. In almost all the industries, the cost of fuel and power 'at factory' is not very significant in relation to the other cost items, e.g. ex-factory value of materials consumed, and of product and by-product, value added by manufacture. A group of twenty-nine manufacturing industries consumed 10.3 million tons of energy (coal equivalent) in 1951 and 13.3 million tons coal equivalent in 1958. The three major industries—iron & steel, cement and cotton textiles—together accounted for about 60 per cent of the total energy consumption in 1959. It is also observed that more and more energy in the form of electricity is being used by the industries.

The consumption of energy per unit of main product has shown a downward trend in almost all the industries but the cost of energy per unit has gone up. Finally, it is observed that even if the cost of energy per unit of main product as it was in 1958 be increased by 40 per cent, there is hardly any effect on the cost of production of main product, the maximum difference of 7.5 per cent being observed in case of two industries only.

CBRI, ROORKEE

Expansion Joint Filler—A simple process for making expansion joint filler from cashewnut shell liquid aldehyde resin and coconut pith has been developed at the Institute. The filler material is suitable for filling up the space provided in cement concrete slabs for expansion.

The total yearly needs of the country for the expansion joint filler material has been estimated to cost about Rs one crore.

INSDOC, NEW DELHI

Indian Science Abstracts—A monthly abstracting periodical, entitled 'Indian Science Abstracts' is being started by Insdoc from January 1965. This publication will deal with the work done by the scientists in India and will include original articles, short communications, critical reviews and informative articles published in scientific and technical periodicals or in the proceedings of scientific conferences, symposia, etc., monographs and other *ad hoc* publications as well as patents and standards. The publication of this periodical is likely to meet the long-felt need for a bibliographical periodical covering the entire scientific output of the country quickly and comprehensively. The annual subscription for the publication will be Rs 50 (foreign £ 10 or $ 30).

Sponsored Research

Lipid Metabolism in Realtion to Atherosclerosis—The effect of vegetable oils (mustard, sesame and coconut) on plasma lipids of rhesus monkeys and chicks has been studied. It has been observed that vegetable oils *per se* do not produce a rise in the plasma cholesterol. If cholesterol is present in the diet, vegetable oils produce a rise in plasma cholesterol. Saturation or unsaturation of the oil has no specific effect on the rise in plasma cholesterol.

When lipid metabolism is altered, carbohydrate metabolism is disturbed simultaneously. Insulin level of the plasma is diminished in the hypercholesterolemic animals—S. BANERJEE & A.S. CHAKRABARTY, S.M.S. Medical College, Jaipur, Rajasthan.

EVALUATION OF RESEARCH WORK

Ways and means of bringing about closer integration of research with planning and industrial development to produce maximum results have been under study. The CSIR Reviewing Committee has also emphasised the need for relating research to the industrial programmes.

A new project has therefore been started for the evaluation in economic terms of applied research in the national laboratories. The project aims at building up estimates in monetary terms of each and every laboratory's contribution towards the development of gross national product in different sectors of the economy and developing cost-benefit ratios by relating investments with the output realised. The study is also expected to bring about orientation in the thinking of scientists towards a more concrete economic bias in their work.

Under this project, preliminary studies have been completed in respect of eleven laboratories by a team consisting of scientists and industrial economists. In the light of the experience of the team, a proper methodology for a continuing evaluation of the different types of research projects in various laboratories is being evolved. With a continuing project, it will be possible to make available data on economic impact of research every year and to direct research purposefully to economic goals.

In the meantime, attempts have been made to evaluate the saving in foreign exchange effected through design and fabrication of plants, direct production of import substitutes, release of processes for industrial exploitation and consultancy service. It has been estimated that the work of 20 out of 28 laboratories has helped to conserve foreign exchange of the order of about Rs 22.42 crores. Of this, the continuous component is stated to be over Rs 13 crores.

New Publications

Mazumdar, B. C. & Banerjee, K.P.—Use of silty soil as a filler in bituminous concrete. Road Research Paper, No. 56, CRRI, Delhi.

Ghosh, R.K. & Khanna, K.K., Measurement of moisture differential in concrete pavement slabs. Road Research Paper, No. 57, CRRI, Delhi.

Maitra, A.K., Jayprakash, K.C., Mukherjee, K.P. & Majumdar, S.K. (CMRS, Dhanbad)—A Survey of stone-dusting materials in use in Indian mines. Research Paper No. 6, Reference CMRS-V4/6, May 1963, pp. 13.

Errata

In *CSIR News*, Vol. 14, No. 19, page 3, col. 2, 5th and 6th lines from bottom, please read "increases to Rs 2325.3 millions in 1970-71" instead of "increases to more than sevenfold to Rs 8897.2 millions in 1970-71".

Dr A. Roy

DR AMALENDU ROY, Deputy Director, Research & Training Institute, Oil & Natural Gas Commission, has been appointed Deputy Director, National Geophysical Research Institute, Hyderabad with effect from Sept. 11, 1964.

Shri Amalendu Roy (*b.* Jan. 1, 1924), after passing M.Sc. degree in Physics from the Dacca University in 1946, joined the newly opened Geophysical Section in the Geological Survey of India and carried out geophysical exploration work relating to minerals, ground water and foundation. During his seven years' tenure at the Geological Survey of India, Shri Roy obtained B.Sc. in Geology, thereafter he was sent to U. S. A., where he obtained M.S. degree in Exploration Geophysics from the Colorado School of Mines.

In 1954, Shri Roy joined the Indian Institute of Technology, Kharagpur where he taught and conducted research in various aspects of Exploration Geophysics till July 1961. During this period, he obtained Ph.D. degree and published a number of research papers.

In 1961, Dr Roy joined the Oil & Natural Gas Commission as Superintending Geophysicist, and was made in charge of (i) the Surface Geophysical Parties (gravity, magnetic and seismic) working in Punjab and Southern India (Madras & Andhra Pradesh) and (ii) the Electrologging parties working throughout India. His duties included supervision, technical guidance and the general day-to-day administration of geophysical and electrologging field parties (thirteen in all), interpretation of results, their integration and correlation with geology, and recommendation for further work and/or drilling, etc. In 1963, he was transferred to the Research & Training Institute of the Commission as Deputy Director, where he assisted the Director in setting up a new Research & Training Institute, in organising and imparting training to recruits, in arranging refresher courses for senior employees and in organising applied research pertaining to Petroleum Exploration (geology, geochemistry, geophysics & drilling) and Exploitation.

Dr Roy is a Member of the Society of Exploration Geophysicists (U. S. A.) and the European Association of Exploration Geophysicists. He is also a founder Fellow of the Indian Geophysical Union.

Shri C.P. Natarajan

SHRI COIMBATORE PANCHANANDA NATARAJAN, Scientist C. CFTRI, Mysore has been promoted as Scientist E with effect from June 22, 1964.

Shri Natarajan (*b.* Sept. 8, 1921) received his early education in Madras State and passed B. Sc. from Madras University in 1941 and M.Sc. in chemistry from Andhra University in 1943, specialising in the chemistry of foods, drugs and water. The same year he was awarded the Madras Government Scholarship to work in the Biochemistry Department of the Indian Institute of Science, Bangalore, where he was absorbed as Assistant Biochemist. In 1945, Shri Natarajan was awarded the Government of India Scholarship for overseas training in Food Technology at the University of California, Berkeley, U.S.A., where he obtained M.S. Degree in Food Technology. He was appointed Honorary Travelling Fellow in Food Technology at the same university. He was also elected to the Institute of Food Technologists and Sigma Xi.

After his return from the U.S.A. in 1949, Shri Natarajan was appointed Inspector, Vegetable Oils Products Control and then Chemist-in-charge at the Fruit Products Laboratory, Ministry of Agriculture. In 1950, he joined CFTRI as Junior Scientific Officer and was promoted as Senior Scientific Officer : Gr. II in 1957 and Senior Scientific Officer : Gr. I in 1958 (Scientist C). He is now the Chairman of the Discipline of Spices and Flavour Technology.

Shri Natarajan's researches cover a wide field in coffee and tea technology, such as standards and specifications for coffee and tea, soluble coffee, soluble tea (from green leaves, now being standardised), detection of adulteration in coffee, coffee processing, packaging and storage, quality aspects of tea and chemical composition. His contributions to science have been recorded in about 80 research papers and channelised as technical aid to Coffee Board and Coffee Industries and in organising training of personnel of Coffee Board in the newer venues of coffee technology.

Shri Natarajan is alternate member of the Tea Research Liaison Committee, Tea Board ; member, Export Committee in Chicory, Ministry of Health ; member, Tea Sectional Committee, Indian Standards Institution and member, Indian Spices and Cashewnut Committee. He is an Associate of the Royal Institute of Chemistry, London, and member of the Society of Biological Chemists (India), Association of Food Technologists (India), Indian Chemical Society and New York Academy of Sciences.

PATENTS

Filed

94863 : *Improvements in or relating to the processing of textiles for imparting simultaneously improved tear resistance and abrasion resistance*—V.B. CHIPALKATTI, R.M. DESAI, N.B. SATTUR & IFTIKHAR HUSSAIN, Shri Ram Institute for Industrial Research, Delhi.

Philippines

5851 : *A process for the direct solvent extraction of fresh coconut kernels for recovery of oil and edible meal*—B.H. KRISHNA, V.B. SHANBHAG, K.G. RAMASWAMY & M.V. RAO, CFTRI, Mysore.

Accepted

85446 : *Preparation of carboxylic cation-exchange materials*—N. KRISNASWAMY, V. K. INDUSEKHAR & B.D. DASARE, NCL, Poona.

85447 : *Heat flow transducer*—M.L. GUPTA, CBRI, Roorkee.

86541 : *A reactor for carrying out highly exothermic and explosive reactions particularly suited for chlorination of methane*—S.P. MUKHERJEE, A.D. DESHPANDE, G.V. POTNIS & M.U. PAI, NCL, Poona.

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CSIR NEWS

VOL. 14 NOV. 23, 1964 : MAGHA 2 1886 NO. 22

Directors' Conference

The Fourteenth Conference of the Directors and Heads of National Laboratories/Institutes of CSIR will be held at the CDRI, Lucknow during Dec. 5-7, 1964. Shri M.C. Chagla, Minister for Education and Vice-President, CSIR will inaugurate the Conference on Dec. 5, 1964 at 10 a.m.

SASMIRA, Bombay

Shri D.N. Shroff and Shri Shantilal M. Mehta have been re-elected the President and Vice-President respectively of SASMIRA, Bombay for the year 1964-65.

STAFF NEWS

Appointments

SHRI S. C. SHARMA — Garden Superintendent, NBG, Lucknow (Sept. 10, 1964).

DR NARENDRA SINGH—Scientist C, CFTRI, Mysore (Sept. 9, 1964).

DR G.P. DUTTA—Scientist B, CDRI, Lucknow (Sept. 29, 1964).

SHRI M.S JAIN—Scientist B, CRRI, Delhi (Oct. 7, 1964).

SHRI B.S.R. SASTRI,—Scientist B, CECRI, Karaikudi (Oct. 16, 1964).

DR B.K. SAIKIA—Scientist B, RRL, Jorhat (Oct. 20, 1964).

SHRI B.G. NADIG—Scientist C, Central Design & Engineering Unit, CSIR Secretariat, New Delhi (Nov. 9, 1964).

Promotions

SARVASHRI D. C. PARASHAR & RAMGOPAL SINGH—Scientists A, NPL, New Delhi (Sept. 7, 1964).

SHRI S.L. DAHAKE—Scientist A, NPL, New Delhi (Sept. 14, 1964).

SARVASHRI S.B. LODH & T.K. DATTA, Scientists B—Scientists C, RRL, Jorhat (Sept. 19, 1964).

SHRI M.C. RAGAVAN, Senior Scientific Assistant—Junior Documentation Officer, CRRI, Delhi (Oct. 7, 1964).

SARVASHRI M.S. SUBBA RAO & N. RAJASEKHARAN, Scientists A & J. MEENA RAO, Senior Scientific Assistant — Scientists B, CFTRI, Mysore (Oct. 19, 1964).

SHRI J.N. HAZARIKA, Scientist A and SARVASHRI H.P. BEZBARUAH & D.N. BORDOLOI, Senior Scientific Assistants — Scientists B, RRL, Jorhat (Oct. 20, 1964).

DR K.R. BHATTACHARYA & SHRI K.E. EAPEN, Scientists A—Scientists B, CFTRI, Mysore (Oct. 23 & Nov. 2, 1964 respectively).

SHRI R.C. CHANDRA, Curator, BITM, Calcutta—Exhibition Officer, VITM, Bangalore (Nov. 2, 1964).

SHRI M.G. THAKAR took charge as Administrative Officer (Grade I), CSIO, Chandigarh (Nov. 9, 1964).

Resignation

SHRI M.R. THAPAR, Scientist B, RRL, Jorhat (Sept. 15, 1964).

Nominations

SHRI K.M. AGARWALA, Manager, Hindi Unit, CSIR—Member, Committee for coordinating publishing programmes and avoiding duplication between different institutions of the Ministry of Education.

DR H.L. UPPAL, Scientist, CRRI, Delhi — Member, Committee to advise on the specifications to be adopted for the work of construction of a road of about 1000 miles from Bareily to Amingaon (Assam), constituted by the Ministry of Transport and Communications.

DR A.B. KAR, Scientist, CDRI, Lucknow—Member, WHO Expert Advisory Panel on the Biology of Human Reproduction.

DR K.P. KACKER, Scientist, CBRI, Roorkee has been elected member of the Institute of Clay Technology, London.

ISI Nominations

SHRI P. R. BHANDARY, Scientist, CMERI, Durgapur—Member, Cooling System Equipment Sub-Committee.

SARVASHRI S. G. N. SWAMY & V. M. MENON, Scientists, CMERI, Durgapur—Member and alternate member respectively, Methods of Non-destructive Testing of Materials Sub-Committee.

DR Y. NAYUDAMMA, Director, CLRI, Madras—Chairman, Leather Sectional Committee.

SHRI N. SUBRAMANIAN, Scientist, CECRI, Karaikudi—member, Preservatives and Special Product Sub-Committee.

SHRI R. D. GUPTA, Scientist, CLRI, Madras—member, Composition of Surgical Instruments Sectional Committee.

LT. GEN. H. WILLIAMS, Adviser, CSIR—Member, Modular Coordination Sectional Committee.

DR H. A. B. PARPIA, Director, CFTRI, Mysore—Chairman, Soft Drinks Sectional Committee and SHRI H. C. BHATNAGAR, Scientist, CFTRI, Mysore, alternate member of the Committee.

SHRI NAUNIHAL SINGH, Scientist, NPL, New Delhi—Member, Composition of Air Compressors Sectional Committee.

SHRI M.K. DAS GUPTA, Scientist, NPL, New Delhi—Member, Sluice Valves Sub-Committee.

DR B. K. AGARWALA, Scientist, NPL, New Delhi—Member, Fluid Flow Measurement Sub-Committee, Fluid Flow Measurement in Open Channel Sub-Committee and Fluid

(Contd on p. 4, col. 1)

BRIEFS

Symposium on Palynology

A three-day symposium on Palynology (*CSIR News*, Vol. 14, No. 8, p.1) was inaugurated at the National Botanic Gardens, Lucknow by Prof. K.N. Kaul, the Director, on Oct. 8, 1964. There were five sessions on Palynology of cryptogams and gynmosperms ; pollen development ; pollen morphology ; pollen cytology and physiology ; and aeropalynology and fossil palynology. In all, sixty-five papers were submitted at the symposium which was attended by 48 delegates from universities, colleges and research institutes in India.

An Experts' Committee was constituted to coordinate the palynological studies being carried out at various places in the country.

Industrialists' Meet at RRL, Hyderabad

An Industrialists' Meeting was held at RRL, Hyderabad on Nov. 6, 1964 on the occasion of the 15th Foundation Day of the Laboratory. More than 40 leading industrialists and senior officials of the Industries Department ofAndhra Pradesh Government participated in the meeting.

Dr G.S. Sidhu, Director of the Laboratory, welcoming the various industrialists and government officials to the meeting, said that the objective of the meeting was to exchange ideas on how the laboratory could play more useful role in the development of industries.

The following are some of the important suggestions made at the meeting : (i) There should be closer collaboration between the Department of Industries, Andhra Pradesh Industrial Development Corporation and other Government Organisations and the Laboratory for promotion of industries in the State ; (ii) The laboratory may take up more projects which come within the scope of the Small Scale Industrial Sector; (iii) The cost factor should be kept in mind by the laboratory while developing processes to be able to compete with foreign processes; (iv) The entrepreneurs should try to utilise the processes developed indigenously even where the costs are not competitive with foreign processes, as it would help saving of foreign exchange; (v) It would be more useful if the laboratory could enter into commercial agreements with firms for undertaking turn-key jobs and to act as general technical consultants; and (vi) Industries should also start their own research centres as far as possible.

Producer Gas Plant at NML

A producer gas plant of capacity 15,000 cu.ft/hr has been installed at NML, Jamshedpur in the Mineral Beneficiation Pilot Plant for producing gas for magnetising reduction roast of ferruginous manganese ore in horizontal as well as vertical kilns and also for use in continuous sintering machine and rotary dryers. The gas plant comprises of Wellman Galusha gas producer (water-jacketted type), a scrubber and a gas holder.

Advances in Palynology

The NBG, Lucknow has brought out a publication entitled *Advances in Palynology* (pp. vi+438, Royal 8vo). The book covers a wide field from algae to angiosperms, horticulture and plant breeding, aeropalynology, medicine, geology, stratigraphy, melittopalynology, etc. in eighteen chapters, all written by Indian specialists in the field. The book is expected to be extremely useful for the M.Sc. students of botany.

Dr Audun Ofjord

Dr Audun Ofjord, Director of Bergen Institute for Materials Testing and Research, and Lecturer at Bergen Technical College & the University of Bergen, joined CMERI, Durgapur as Unesco Expert on Oct. 7, 1964.

Born in 1922 at Bergen, Norway, Mr Ofjord obtained his B.Sc. degree from the Case Institute of Technology, Cleveland, Ohio, U.S.A. in 1948 and S M. and Sc. D. from the Massachusetts Institute of Technology, Cambridge, Mass. U.S.A. in 1950 and 1952 respectively. He worked as Junior Engineer at the Bergen Institute for Materials Testing and Research during 1942-45, Research Assistant and later Research Engineer at Massachusetts Inssitute of Technology during 1948-52, Research Engineer, Royal Norwegian Institute for Scientific & Industrial Research during 1951-54, Senior Engineer, C.A. Maguire & Associates, Boston, Mass. in 1954-55, Professor of Mechanical Engineering, North Eastern University, Boston, Mass. in 1955-56 and Consultant on steel mill buildings, Koppers Co., Pittsburgh, Penna, in 1956-57. Since 1957, he has been holding the present post. In addition, he is the Secretary of Government Appointments Committee to evaluate present and plan future research on materials and processing for the mechanical industry in Norway since 1963.

Dr Ofjord has been the President of the Corrosion Society in Bergen, Norway during 1960-64. He has five publications to his credit.

Visitors

Dr .J.L. Devries, Chief, Application Research Laboratory, Philips, Holland visited CGCRI. Calcutta on Aug. 7, 1964.

Prof. Znanensky and Mrs Beloussova, Russian scientists, visited NGRI, Hyderabad on Oct. 12, 1964.

Dr Tervo Sakaino, Professor of Glass Science, Tokyo Institute of Technology, Tokyo and Dr M. Imaoka, Professor of Glass Science, Tokyo University, Tokyo visited CGCRI, Calcutta on Oct. 17, 1964.

Dr William W. Shaver, Director, International Research Division Corning Glass Works, Corning, N.Y., U.S.A. visited CGCRI. Calcutta on Oct. 23, 1964 and delivered a lecture on 'Research developments in glasses with special reference to high strength glasses and photographic glasses'.

Drs H. Schuette and D. Groegre of the Institute of Plant Biochemistry (Halle) of the Academy of Sciences (GDR) visited CDRI, Lucknow during Oct. 22-30, 1964 and delivered two lectures on 'Biosynthesis of lupin alkaloids' and 'Physiology and biosynthesis of quinazoline alkaloids'.

Mr Ivan E. Karnaukhov, Counsellor for Agricultural Affairs, Embassy of U S.S.R., New Delhi visited CBRI, Roorkee on Oct. 28, 1964.

RESEARCH PROGRESS

National Laboratories

CGCRI, CALCUTTA

Electrical Properties of Indian Mica : Effect of Thermal Ageing—Commercial samples of good stained, heavily stained, and black spotted mica were selected on the basis of minimum available power factor. Their power factor was determined after conditioning them at several cycles of periodic heating at 200°C. and 400°C. for 24 hr and cooling to room temperature. It was observed that depending upon the nature and amount of impurity inclusions, there were definite maxima and minima in the values for power factor at different heat treatment cycles. The relaxation dielectric loss of moisture, physically bonded on mica has been suggested to be responsible for altering the power factor values.

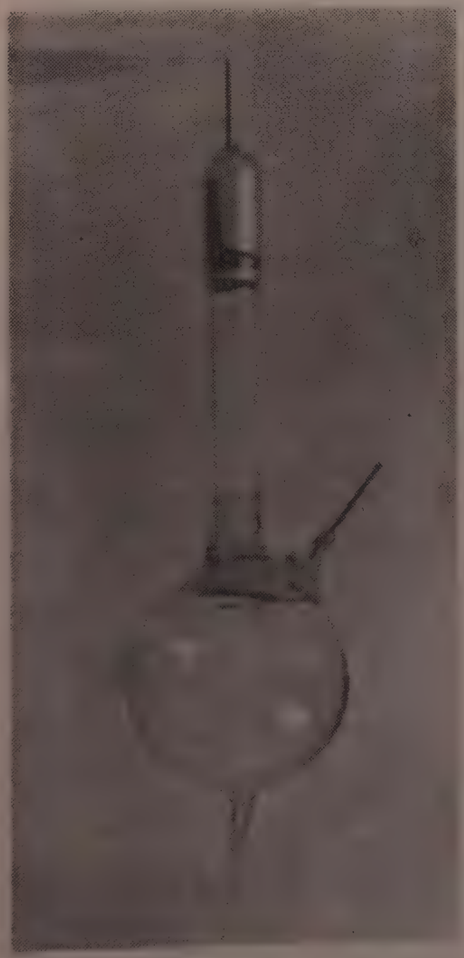
NML, JAMSHEDPUR

Minerals from Manavalakurichi Beach Sand—Pilot plant scale investigation on concentration of economic minerals such as monazite, ilmenite, rutile. zircon has been completed on a beach sand sample from Manavalakurichi, Madras State. The samples were sent by the Travancore Minerals Ltd at the instance of Atomic Energy Department, Government of India. The sample of heavy mineral sands preconcentrated by beach washings or gravity contained about 66.6 per cent ilmenite and lucoxene, 10.7 per cent monazite, 10.8 per cent zircon, 1.8 per cent rutile, 4.2 per cent garnet and rest sillimanite, quartz, etc. Continuous operational tests were carried out and good grade concentrates of individual minerals were obtained with high percentage recoveries. Suitable flowsheets have been developed and tested for efficient separation of the economic minerals employing in different stages, low and high intensity magnetic separation, gravity concentration, sizing and high tension separation process.

NAL, BANGALORE

Low-pressure d.c. Mercury Vapour Lamp—A new and improved low-pressure mercury vapour lamp, suitable for use in interferometric and spectrometric studies, has been constructed. The lamp, of Pyrex glass construction, works steadily on 110/220 V. d.c. from mains or a rectifier and satisfies the two important requisites of a light source for interferometric and spectrometric work, that is, narrow width of spectral lines and brightness. It is, therefore, superior to the conventional high pressure mercury vapour lamps whose utility for sharpness of lines is limited. The new lamp also eliminates most of the defects present in conventional lamps, such as difficulty in transferring liquid mercury from the anode pool to the cathode pool during discharge, starting of the lamp, burning position, effect of localised temperature, loss of vacuum, etc.

The lamp can be easily constructed in the laboratory and gives trouble free service for a long time.



NAL, Bangalore—Low pressure d.c. mercury vapor lamp constructed in the Laboratory.

Sponsored Research

Amino Acid Metabolism with Special Reference to Intestinal Function—The site of absorption of amino acids in the intestine has been studied by measurement of uptake by segments obtained from different regions of rat intestine using C^{14} and H^3 labelled amino acids. The results indicate that the pattern of uptake differs quite markedly in the case of the five amino acids so far studied. The uptake is not inhibited by dinitrophenol ($10^{-4}M$).

The distribution of pyridoxal phosphate phosphatase in the intestine indicates differences in the pattern of different animal species. Pyridoxal kinase has been shown to be present in the intestine. In a single case of Kwashiorkor studied, the pattern is markedly different from that of adult human.

A sensitive method for the assay of 5-hydroxytryptophan decarboxylase by ion-exchange chromatography using C^{14}-labelled amino acid has been developed. Very high activity has been found in monkey intestine and the activity is much less in the rat intestine—A.N. RADHAKRISHNAN, Wellcome Research Unit, Christian Medical College Hospital, Vellore.

Research Papers

DAS, S. R. (NPL, New Delhi)—Foveal sensitivity for a protanope in relation to stiles "blue" and "green" mechanisms. *Proc. opt. Soc. Amer.*, **54** (1964), 839-41.

BUCHAR, V.M. & DAS, S.R. (NPL, New Delhi)—Evaluation of the colour changes of screened indicators: phenol red plus methylene blue and phenol red with copper oxalato complex. *Proc. opt. Soc. Amer.*, **54** (1964), 817-20.

SOMAN, R. & SUKH DEV (NCL, Poona)—The diterpenoids of erythroxylon monogynum—II—Defadarool : A new type in tetracyclic diterpenoids. *Tetrahedron Lett.*, No. 19, (1964), 1181.

SINGH, S.M. (CBRI, Roorkee)—Studies on indigenous, polyvinyl acetate emulsion paints, *Paintindia*, **14** (1964), 93.

STAFF NEWS

(*Contd from p. 1, col. 3*)

Flow Measurement in Closed Conduct Sub-Committee.

SHRI PREM PRAKASH, Scientist, NPL, New Delhi—Member, Glass Syringes Sub-Committee.

Deputations

DR AMARJIT SINGH, Director, CEERI, Pilani attended the Fifth International Conference on Microwave Tubes, held at Paris during Sept. 13-18, 1964. He presented two research papers entitled (i) Dielectric tube wave guides for beam plasma interaction by A. Singh & H. S. Dewan and (ii) Focusing of electron beams in increasing magnetic fields by N. C. Vaidya & O. P. Gandhi.

The following scientists of CMERI, Durgapur, have been deputed for advanced training :

SHRI K. V. SHETTY : Structural Engineering in U. K., Federal Republic of Germany & Switzerland—under U. N. Special Fund Fellowship Plan for 8 months (Oct. 4, 1964).

SHRI M. S. KESHAV : Post-graduate course in Automobile Engineering at the College of Aeronautics, Cranfield—under UN Special Fund Fellowship Plan for 11 months (Oct. 1, 1964).

SHRI P. CHENCHANNA : Mechanical Engineering under the German Academic Exchange Service Scholarship, Federal Republic of Germany for one year and four months (June 28, 1964).

SHRI P. K. PANDEY : Mechanical Engineering in France under the French Government Scholarship for 8 to 9 months (Oct. 1, 1964).

DR PREM SAGAR, Scientist, CDRI, Lucknow left for Prague, Czechoslovakia on Oct. 12, 1964 for a post-graduate course on Modern Problems in Biology, sponsored by Unesco at the Czechoslovak Academy of Sciences for a period of one year.

DR HARI NARAIN, Director, NGRI, Hyderabad attended the symposium on 'Gravity and determination of the earth' held at Prague, Czechoslavakia during Oct. 6-10, 1964 under the auspices of the International Association of Geodesy of the International Union of Geodesy and Geophysics. He also visited the Geophysical Institute of the Czechoslovak Academy of Sciences and returned to India on Oct. 16, 1964.

DR K. BHASKARAN, Scientist, CDRI, Lucknow has been deputed to U.S.A. to carry out studies in the field of bacterial genetics for 4 months, under Exchange of Research Workers Grant offered by WHO (Oct. 30, 1964).

DR D. SEN, Scientist, NPL, New Delhi attended the International Conference on Interference and Coherence, held at Sydney during Aug. 24-Sept. 8, 1964.

SHRI K. G. KRISHNAMURTHI, Officer on Special Duty, NAL, Bangalore left for New Zealand on Nov. 8,1964 to attend the meetings of the British Commonwealth Scientific Committee. He will also be visiting en route some of the CSIRO establishments in Sydney, Canberra and Melbourne.

Doctorate award

SHRI A. B. DESHAPANDE, NCL, Poona—Ph.D. (Poona University) ; thesis : *Studies on polymerisation* (guide : Dr S. L. Kapur).

Dr S.C. Aggarwal

DR SUMER CHAND AGGARWAL, Manager of *Instrumentation Ltd*, Kotah, has been appointed Scientist E at CMERI, Durgapur with effect from Oct. 1, 1964.

Shri Aggarwal (*b.* Sept. 8, 1932) received his early education at D.A.V. College, Ambala. He graduated in Engineering from Agra University in 1955 with distinction and after one year's apprenticeship in engineering concerns he served at the Birla Institute of Technology and Science, Pilani during 1957-58. He proceeded to U.S.S.R. in 1958 for higher studies under Unesco fellowship and was awarded Ph. D. in Machine Building. In 1961, he visited U.S.S.R., U.K., France and Italy on fellowship and on his return joined the Indian Institute of Technology, Bombay and later the present post.

Dr Aggarwal has been a visiting consultant to several leading manufacturing concerns of Bombay and has been guiding M. Tech. students on the problem of Machine Building and Production Processes. He has published eight research papers and technical reports.

PATENTS

Filed

95417 : *Improvements in or relating to an anode material for use in primary cells*—M.A.V. DEVANATHAN, NARAYANAN RAMASWAMY & S. VENKATESAN, CECRI, Karaikudi.

95418 : *Improvements in or relating to Lechlanche type dry cells*—M.A.V. DEVANATHAN, N. RAMASWAMY & S. VENKATESAN, CECRI, Karaikudi.

95419 : *Improvements in or relating to sharpening razor blades*—M.A.V. DEVANATHAN, V.K. VENKATSESAN & S. SARANGAPANI, CECRI, Karaikudi.

95420 : *Improvements in or relating to soldering of aluminium cables*—B.A. SHENOI, R. SUBRAMANIAN & S. CHAKRAPANI, CECRI, Karaikudi.

96342 : *Improvements in ice pointed apparatus for thermocouples, thermometers and the like*—V.P. WASAN & T.D. BANSAL, NPL, New Delhi.

France

988479 : *A process for the disproportionation of alkylbenzene*—G.S. BHARGAVA, P. DUHAUT, G. FOLLAIN, MOHAN LAL & NIRMALA RAY, IIP, Dehra Dun.

Sealed

81279 : *Improvements relating to the process for insect-proofing of gunny bags for storage of foodgrains*—S.K. MAJUMDER, J.K. KRISHAN RAO & H.G. SETHUMADHAVAN, CFTRI, Mysore.

65610 : *Improvements in or relating to the production of chemically bonded metal clad or unclad basic refractories*—R.S. MATHUR & H.V B. RAO, NML, Jamshedpur.

Licences issued

Licences have been issued for the following processes developed at the laboratories of CSIR for commercial utilisation.

1. Improvements in or relating to the manufacture of lime reactive surkhi mixture (Indian Patent 90470), CRRI. Delhi—Shri V.P. Jain, 133, B.K. Paul Avenue, Calcutta.

2. Manufacture of lounginin (Indian Patents 60863 and 63719), RRL, Hyderabad—*Standard Products Manufacturing Co*, Bombay.

Printed and published by Shri S A. Charl, Publications & Information Directorate (CSIR), Delhi-12, at Asia Press, Delhi-6

R.N. 4212/5

CSIR NEWS

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DIRECTORS' CONFERENCE

The Heads of the National Laboratories of CSIR and Cooperative Research Associations, in their Fourteenth Conference held at Lucknow during December 5-7, 1964, recommended several measures for improvement of scientific research in CSIR institutions and effective utilisation of research results.

Opening the conference, the Union Minister of Education and Vice-President of CSIR, Shri M.C. Chagla, stressed the importance of making our own design, know-how and equipment, and pointed out the need for strengthening the design and fabrication departments in the national laboratories. He regretted the tendency to turn to other countries instead of trying to use indigenous talent and resources. He also called for top priority to research aimed at finding ways and means of conserving foreign exchange and making our country self-sufficient.

Shri Chagla wanted the people to be 'science-minded', and emphasised the role of science museums in this respect. In order that science should permeate to the masses, there should be a chain of science museums where children as well as grown-ups could go and watch the achievements of science.

Shri Chagla regretted that the good work done by the national laboratories is not known to the public for want of proper publicity. He wanted the Directors to give special attention to publicising the actual work done by the laboratories by keeping the public informed of the results of research and their usefulness to the country in respect of economic and social progress.

Shri Chagla reminded the Directors that it is their greatest responsibility not only to give the lead to junior scientists but also to encourage and inspire them to give of their best. It is not merely the work of the Director as such which ultimately matters, but it is equally important how many talented scientists that have come out of his laboratory.

Shri Chagla did not want scientists to go abroad for lack of facilities in India. He wanted that we should give sufficient encouragement and facilities and right atmosphere to our young scientists and their work should receive proper appreciation so that they will not leave the country for jobs.

In his address to the conference, Dr S. Husain Zaheer, Director-General, Scientific & Industrial Research said that CSIR has been now giving great importance to the dissemination and collection of scientific information and strengthening of liaison with industry. Another great step taken recently by CSIR concerns the service conditions for its scientific workers. A new system has been adopted for promotions based solely on merit, according to which the work of a scientist is assessed every five years and if his work is found good he is promoted to the next grade. This is expected to create greater confidence and a greater degree of satisfaction to the younger scientists. Dr Zaheer added that a time has come when a revision of the pay scales of scientists and technologists has become desperately necessary. A revision in the higher grade also is called for.

Dr Zaheer also stressed the necessity for closest collaboration between national laboratories, universities, science teaching institutions and industrial laboratories in the country.

Dr Zaheer said that some of his main tasks as Director-General were to give greater support to younger scientists, planning of scientific programmes, promote greater liaison between the industry as well as with the general public so that research results are effectively

(*Contd on p. 4, col. 1*)

Joint Special Meeting of GB & BSIR

A Joint Special Meeting of the Governing Body and Board of Scientific & Industrial Research will be held on Jan. 14, 1965 at 5.00 p.m. to consider the Third Reviewing Committee Report. Shri Lal Bahadur Shastri, Prime Minister of India and President of CSIR, will preside.

STAFF NEWS

Shri S. B. Deshaprabhu, Scientist, Publications & Information Directorate (PID), New Delhi and Shri S. Parthasarathy, Insdoc, New Delhi, took over as In-Charge of PID and Insdoc respectively with effect from Dec. 26, 1964 consequent on Shri B. S. Kesavan, Director, Insdoc & PID, proceeding on a month's earned leave. Sarvashri Deshaprabhu and Parthasarathy will exercise the powers delegated to the Directors of National Laboratories in respect of their respective units.

Appointments

SHRI S.R. ANAND—Documentation Officer, NCL, Poona (Nov. 6, 1964).

DR P. C. PARTHASARTHY—Pool Officer, NCL, Poona (Nov. 2, 1964).

SHRI AQUEIL AHMED—Scientist, Survey & Planning of Scientific Research Unit, CSIR, New Delhi (Dec. 4, 1964).

DR B.D. MEHROTRA—Pool Officer, CDRI, Lucknow (Nov. 16, 1964).

SHRI S.P. MATHUR—Pool Officer, NGRI, Hyderabad (Nov. 23, 1964).

Nominations

SHRI B.S. KESAVAN, Director, Insdoc & PID, New Delhi—Member, Expert Advisory Committee on Library Science, constituted by the Commission for Scientific & Technical Terminology, Ministry of Education, New Delhi.

DR G.S. SIDHU, Director, RRL, Hyderabad—Representative of CSIR on the Development Council for Paper, Pulp & Allied Industries,

(*Contd on p. 6, col. 1*)

BRIEFS

Shri M. C. Chagla at NBG

Shri M. C. Chagla, Union Minister for Education and Vice-President, CSIR, visited NBG, Lucknow on Dec. 6, 1964 and went round the Garden and the research laboratories. He also visited the Annual Chrysanthemum, Coleus, Marigold and other ornamentals Show organised by the Garden during Dec. 5-7, 1964.

WHO assists CDRI

The World Health Organisation has offered an assistance of $3000 for carrying out work on 'Genetics of *Vibrio cholerae*' at CDRI, Lucknow.

Unesco Expert at CSIO

Mr R. B. Abell, U. N. Expert joined CSIO, Chandigarh in Optics Group on Sept. 23, 1964.

Research Unit on Thermodynamic Properties of High Polymer Solution

The Director-General, Scientific & Industrial Research has approved the continuation of the existing Unit on 'Thermodynamics of liquid mixtures' for a period of three years under the new name 'Thermodynamic properties of high polymer solution'.

Research for Industry

Research for Industry is the title of an illustrated brochure, recently brought out by CSIR. The brochure (pp. 68) is meant to give an idea of some of the contributions made to industry by the applied research carried out in the laboratories of CSIR and briefly describes some of the projects, the impact of which on industrial development and social life is discernible.

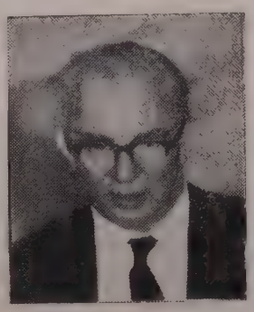
The brochure is divided into two parts. The first part deals with some selected projects such as electronics, mining, aeronautics, chemicals, food, health and medicine, glass, coal, metallurgy, leather and roads. In part II are included the lists of processes in production, licenced processes awaiting production, technical aid against payment, sponsored research, cooperative research associations and processes released without charge.

NAL Annual Report

The Annual Report of the National Aeronautical Laboratory, Bangalore for the year 1963-64 has been published. The report (pp. 68) summarises the progress of work in the fabrication and erection of the wind tunnel plant and equipment and a number of associated studies in the fields of high-speed and low-speed aerodynamics, fluid mechanics, aerophysics, computer programming, wind power, etc. There are nine appendices listing mainly the staff, publications, windmills and wind electric generators installed, wind power potential of different stations, etc.

Mr C.E. Phillips visits CMERI

Mr C.E. Phillips, Superintendent, Materials Group of the National Engineering Laboratory, East Kilbride, Glasgow, U.K. visited CMERI Durgapur on Dec. 1, 1964. Addressing the Scientists at a meeting, he said that they should have more direct contact with the industries, and create confidence in the industries to use the facilities available in the Institute. He explained in detail how over a period of 14 years, the National Engineering Laboratory, Glasgow had slowly built up its reputation in the industries. Contacts with the industries were mutually beneficial in that the Scientist was exposed to newer and newer challenges in his field which sharpens his intellect and the industry is in touch with the latest developments and modern techniques. He emphasised that in addition to specialisation in his own field, the scientist should have a broad picture of the borderline disciplines, to have an integrated approach to the problems of the industry. He also emphasised the fact that basic research should form an important part, as it was by advancement in this field alone that the reputation of the Institute could be built up. While testing work was not as important as research, it helped in keeping contact with industries. He laid emphasis on the fact that much research should be done in the field of materials in an effort to find out their exact behaviour and reason for such behaviour especially at high temperatures. In about ten years' time there would be need for such high temperature materials and it is only proper that research should now be done to meet this anticipated demand, even in India.



Visitors

Maj. Gen. Maharaj Himatsinhji, Chairman, Executive Council, CSMCRI, Bhavnagar visited the Institute during Nov. 9-11, 1964. He evinced keen interest in the various research projects particularly in desalination of sea water, sea water agriculture, marine algae cultivation, marine chemicals, salt washery and experimental salt farm. He formally declared open the new building of the Chemical Engineering Laboratory on Nov. 11, 1964 and addressed the staff of the Institute.

Dr T. Sata, Research Laboratory for Engineering Materials, Tokyo Institute of Technology, Tokyo visited CGCRI, Calcutta on Nov. 23, 1964.

Mr K.N. Barnard, Superintendent of the Chemistry Section of the Naval Research Establishment, Dartmouth, Nova Scotia, Canada, and an expert on the subject of Cathodic Protection of Ships, visited CECRI, Karaikudi on Nov. 27,1964. He addressed the scientist of the Institute on the subject Some Problems in Electrochemistry on the same day.

Mr Barnard was on a visit to India to attend a symposium on Marine Paints held at Naval Chemical & Metallurgical Laboratory, Bombay during Nov. 19-21, 1964.

Delegates to the Eighth Meeting of the Commonwealth Advisory Aeronautical Research Council from Australia, Canada, India, New Zealand and U.K. visited the Wind Tunnel Centre of NAL, Bangalore on Dec. 4, 1964.

Eighteen delegates to the Twenty second Session of the International Geological Congress, representing fourteen countries, visited NBG, Lucknow on Dec. 7 & 12, 1964.

Mr Roland Michner, Canadian High Commissioner in India visited the Wind Tunnel Centre of the National Aeronautical Laboratory, Bangalore on Dec. 11, 1964.

FAO INTERNATIONAL FOOD TECHNOLOGY TRAINING CENTRE, CFTRI, MYSORE

The Centre has been established effective from November 1, 1964 immediately following the arrival of the Director-designate, Dr W. J. Gall(Canada), in Mysore. The Centre is in essence a partnership between Canada and India to serve the people of Asia with the Food and Agriculture Organization (FAO) of the United Nations as the administering body.

The 'Canada-Mysore Project' as it is often referred to, was conceived at the FAO Regional Seminar on Food Technology for Asia and the Far East held in Mysore in August 1959. Subsequently it was sponsored by the Canadian Institute of Food Technology (CIFT) and accepted by the Canadian Freedom From Hunger Committee (CFFHC) as its major project within the scope of the world-wide Freedom from Hunger Campaign of the United Nations. In October 1962 Dr Joseph H. Hulse, National Chairman, Canada-Mysore Project (and then President, CIFT) visited Rome, Delhi and Mysore and laid the foundations for the Project. On March 11, 1964 the Agreement on the Centre was signed by FAO and India. It includes provision for an International Advisory Committee composed of representatives of Canada, India and FAO. A sum of $500,000 is being raised by the CFFHC from the Canadian public through church, social and service organizations and from the Canadian food industry. Many prominent Canadians support the project. Dr F.C.A. Jeanneret, Chancellor, University of Toronto is its Honorary President. The Rt Hon. L.B. Pearson, Prime Minister of Canada is an Honorary Vice-President and personally conveyed his best wishes for the Project to Dr Gall, Dr Hulse and Mr N.T. Currie (Treasurer of the Project) in Ottawa on September 15, 1964. Presidents and executive vice-presidents of over 30 major Canadian and international food manufacturing companies comprise the 'industry committee' of the Project. The High Commissioner of India to Canada, Shri Bejoy Krishna Acharya and his wife and the Director, Government of India Tourist Office, Toronto, Dr P.K. Shastri and his wife and the members of the India-Canada Association have assisted in the Canadian fund raising. The late Prime Minister of India, Shri Jawaharlal Nehru, sent a message of support to Dr Hulse, just prior to his untimely death. The Canadian monies will be used for travel and subsistence costs of qualified students from some 17 countries of South and South East Asia, including India, who will be trained in new and improved methods and techniques of food technology in short courses of 2-4 months on specific subjects and in longer courses of up to 2 years' duration. India, through CSIR, is contributing the lecturers, teaching and laboratory facilities, equipment and accommodation for the students, most of which is already available at Central Food Technological Research Institute (CFTRI). The existing two-year post-graduate associateship course in food technology at CFTRI will be 'internationalised' starting from July 1965. In late February/early March 1965 opening ceremonies will be held in Mysore immediately preceding a short Orientation Seminar for a small group representative of food technology in the 17 counties of the area. The major aim of the Centre is to teach practical methods of food preservation in order to increase the quantity and improve the quality of indigenous foods and its approach will be 'industry-oriented'. It is expected that this Centre will provide experience on which to base other international training centres in food technology elsewhere in the world.

Dr H.A.B. Parpia, Director, CFTRI is Co-Director of the Centre and Dr D.S. Bhatia, Chairman, Training Programme, CFTRI is also in charge of the Centre's training programme.

Dr W. J. Gall

Dr W.J. Gall, Director-Designate of the FAO International Food Technology Training Centre, CFTRI, Mysore took charge of his post on Nov. 1, 1964.

Born in Canada in 1924, Dr. Gall received his education in the United States, Canada and Switzerland, obtaining his B.A.Sc. from the University of Toronto and the Doctor of Natural Sciences degree from the Swiss Federal Institute of Technology, Zurich. In Zurich he received a scholarship as the first student under the Canadian-Swiss Exchange Scheme following the Second World War. During 1946-47, Dr Gall was Assistant Chemist with the Canada and Dominion Sugar Co. Ltd. After serving for three years with UNESCO in Paris and Indonesia as Scientific Officer, he joined the Aluminium Company of Canada Ltd and later Commercial Leaseholds Co. Ltd, as Assistant to the General Manager. In 1957 he was appointed to the CRYOVAC Division of W.R. Grace and Co. of Canada Ltd, where latterly he held the post of Technical Director. CRYOVAC, with its sister company, Dewey and Almy and the Overseas Chemical Division of the world-wide Grace organization are major suppliers of packaging materials. equipment and systems to the food industry. Grace is also a major food processor in Europe and an

CFTRI, Mysore—Dr W.J. Gall, Director, FAO International Food Technology Centre (centre) with Dr H.A.B. Parpia, Director, CFTRI (left) and Dr D.S. Bhatia, Chairman, Training Programme, CFTRI (right)

important supplier of agricultural chemicals and fertilisers.

During his seven and a half years with CRYOVAC, Dr Gall has been in continuous contact with the food industry, research organizations and government departments. He has been responsible for research and development and general technical policy, process control and engineering, new process developments, quality control, patents, tariffs, government and industrial liaison. He has also had, in recent years, considerable contacts with bacteriological research pertaining to food safety, particularly that of meat, and with regulatory matters concerning foods.

Dr Gall has resided in 5 countries and travelled extensively. He is owner of coffee plantations in Paraguay and director of a Costa Rican coffee plantation company.

Dr Gall has published articles and papers on various subjects. He is a member of the Association of Professional Engineers of the Province of Ontario and was corporate representative to the Canadian Standards Association (CSA) and the Society of the Plastics Industry (Canada) Inc., member of the Packaging Association of Canada (PAC) and the Canadian Research Management Association and chairman or member of several professional and governmental committees. As Chairman of the CSA Committee on Plastic Film and Sheeting he was responsible for establishing in 1963 the world's first national commercial standard on polyethylene film for packaging backed by a laboratory certification programme. The Scientific Institute, PAC was inaugurated in 1963 with Dr Gall as Chairman.

DIRECTORS' CONFERENCE

(*Contd from p. 1, col. 2*)

utilised and to decentralise administrative control. He has been trying to streamline the administration in CSIR headquarters, and hoped the laboratories would also follow the same lines.

Dr Zaheer paid a tribute to Shri Chagla for his general appreciation of science not only for the industrial development but also for its social and cultural values.

After the address by Dr Zaheer, the Heads of National Laboratories and Cooperative Research Associations and other officers divided themselves into four working groups to discuss the various items on the agenda and make recommendations on them. The working groups pertained to (a) Planning & organisation of research (Chairman : Dr Amarjit Singh), (b) Administrative matters, amenities, etc. (Chairman : Prof. S.R. Mehra), (c) Industrial liaison and inter-laboratory coordination (Chairman: Dr B.R. Nijhawan), and (d) Documentation & information (Chairman: Dr T.S. Subramanian). The recommendations of the working groups were considered at the general session, and some of the conclusions which emerged with unanimous approval regarding measures to be taken for improvement of scientific research in the national laboratories are summarised below :

1. Work on design and engineering should be intensified and strengthened urgently in order to help the industry with designs and technical know-how.

2. The liaison and extension services of CSIR and national laboratories should be strengthened.

3. Industrial research consultancy and extension programmes should be strengthened to assist in speedy industrialisation of the country and to solve the economics and social programmes.

4. Operational research units of adequate strength should be set up at various laboratories to collect data to help planning of research, application of the results of research, consultant service to industry, essential services, etc.

5. Techno-economic surveys of various industries should be undertaken.

6. The national laboratories should be suitably associated with the Export Promotion Councils, different Development Councils, and the Planning Commission. It was felt that this would be the best method of bridging the gap between research planning and industrial requirements.

7. An Instrument Committee should be immediately formed for carrying out the survey of the national requirements of instruments and spare parts, mode of their manufacture, laying down priorities, selection of the laboratories and industries to undertake their testing and manufacture.

8. The rate of research outlay which follows the rate of increase of industrial production should be increased to one per cent as against the present 0.3 per cent of the gross national product.

9. An annual increase in the budget of CSIR laboratories to the extent of 15 to 20 per cent is very necessary in the context of the industrial development of the country.

10. There should be no restriction whatsoever on funds, required for research. It was emphasised that ad hoc cuts would jeopardise valuable programmes.

11. Incentives and rewards such as three increments within the existing scale should be given to scientific workers for original inventions and praiseworthy work.

12. It was emphasised that a time has come when a revision of the pay scale of scientists and technicians working in the national laboratories has become desperately necessary.

13. Promotions should be strictly on merit based on the research record of scientist.

14. Measures for further administrative decentralisation were recommended.

The Conference also recommended that Indian Science Abstracts should be published for an initial period of three years on an experimental measure.

In the end, the Conference passed a vote of thanks to the Vice-President for his initiative and keen interest in the activities of the Council.

Lectures in NCL Seminar

Dr Dettef Groger, German Academy of Sciences, Berlin—Physiology and Biochemistry of Quinazoline Alkaloids (Nov. 17, 1964).

Dr Horst - Robert Schutte, German Academy of Sciences, Berlin—Biosynthesis of Lupin Alkaloids and Related Compounds (Nov. 8, 1964).

Prof. F. Rumford, Visiting Professor of Chemical Engineering at the Indian Institute of Technology, New Delhi—Crystallisation (Nov. 24, 1964).

Prof. C. C. Hall, Director, Warren Springs Laboratory, U.K.—Work in Warren Springs Laboratory (Nov. 30, 1964).

RESEARCH PROGRESS

National Laboratories

CLRI, MADRAS

Specificity of Cathepsin C and Egg Albumin for Hydrolysing Rat Tail Tendon Gelatin—The specificity of crystalline cathepsin C and egg albumin for hydrolysing rat tail tendon gelatin has been studied. The results showed that after hydrolysis by cathepsin C for 30 min. only phenyl-alanine and tyrosine which have only 2 C-terminal amino acids, and other peptides which have 5 N-terminal amino acids were liberated. In the case of egg albumin under similar conditions, peptides having the same 2 C-terminal amino acids and 4 or 5 N-terminal amino acids were liberated. It is evident, therefore, that cathepsin C readily attacks bonds involving the carboxyl groups of phenyl-alanine and tyrosine irrespective of the nature of the partner amino acids in the bonds and possesses a specificity similar to that of chymotrypsin.

CEERI, PILANI

TV Receiver—A laboratory prototype TV receiver has been designed and developed at the Institute. The receiver conforms to CCIR standards and employs inter-carrier system. The following are the specifications of the set : Lines per frame, 625; Fields per second, 50 ; Video band width, 5 Mc/s.; Intermediate frequencies, 33.4 and 38.9 Mc/s ; and R. F. channel, any single channel, say IV in VHF band.

This TV set having imported components up to 15 per cent of its value is expected to cost less than the imported receivers.

CGCRI, CALCUTTA

Glass Sands of Rajasthan—The suitability of sands occurring at Jhir, Chitri, Nimbora and Mudh in Rajasthan, has been examined for making colourless glassware. Jhir and Nimbora sands, which were of fairly good quality and which conformed to Grade 2 IS Specification, could be improved to Grade 1 quality by washing and magnetic treatment. They were then found to be suitable for making colourless glassware. The other two sands, viz. Chitri and Mudh which contained high percentages of iron and alumina, also showed appreciable improvement after processing, and could be used for making commercial glassware.

CFRI, JEALGORA

Nigerian Coal and its Utilisation Pattern—The nature of a sample of Nigerian coal has been under study for its likely utilisation pattern. This coal is a high moisture, high volatile, poorly caking, low rank bituminous coal.

On washing, the ash content is reduced to about half with about 86 per cent yield of clean coal. This treatment also renders the coal to non-clinkering type. The coal is admirably suitable for steam raising purposes.

Judging from the nature of coke obtained in Gray King assay it appears that the particular Nigerian coal may also prove suitable for low temperature carbonisation for the production of smokeless domestic coke. The resultant yield of tar is quite high and may be processed for the manufacture of motor spirit, diesel oil and the like.

Although the coal does not appear to be a good blendable coal, it has been found by actual tests that it can be blended with a prime coking coal to the extent of 15 per cent for the production of composite metallurgical coke for blast furnace.

CEERI, Pilani—Shri M. C. Chagla, Union Minister for Education and Vice-President, CSIR, examining the prototype TV receiver, developed at the Institute

Research Papers

SURYAKUMARI RAMASWAMI, RAMASWAMI, S.K. & BHATTACHARYYA, S.C. (NCL, Poona)—Terpenoids IL : A study of the Prins reaction on the isopropylidene type double bonds—*J. org. Chem.*, 29 (1964), 2245.

WAGH, A.D., PAKNIKAR, S.K. & BHATTACHARYYA, S. C. (NCL, Poona)—Terpenoids XLV: Structure and absolute configuration of canarone. *J. org. Chem* , 29 (1964), 2479.

SUBBARAO, V.V., RAO, R.V.G. & BISWAS, B.A. (NCL, Poona)—Thermal decomposition of cerous oxalate and variation of surface area of the products. *J. Amer. ceram. Soc.*, (July 1964), 356.

WAGLE, S S., LELE, A.M. & KELKAR, D.D. (NCL, Poona)—Indian non-edible oils industry. *Indian Oilseeds J.*, 8 (1964).

STAFF NEWS

(*Contd from p. 1, col. 3*)

Ministry of Industry & Supply, Government of India, New Delhi.

PROF. S. R. MEHRA, Director, CRRI, New Delhi—Member, Managing Committee of the Indian National Group of the International Association for Bridge & Structural Engineering.

DR P. S. GILL, Director, CSIO, Chandigarh — Member National Scientific Advisory Council of the Institute for Comprehensive Medicine; and Editorial Board for Comprehensive Medicine, California; Senate of the Panjab University, Chandigarh.

DR B. SINGH, Scientist, CMRS, Dhanbad—Member, Sub-Committee on Verification of Coal Tubs of the Directorate of Weights & Measures, Ministry of Commerce, New Delhi.

SHRI R. M. KRISHNAN, Scientist, NML, Jamshedpur—Member, Technical Study Team for examining the requirements of pig iron from qualitative point of view of foundries, Ministry of Industry and Supply, New Delhi.

DR K. N. MATHUR, Emeritus Scientist, NPL, New Delhi—Director on the Board of Directors of the National Instruments Limited, Calcutta.

SHRI BALDEV SINGH, Industrial Liaison & Extension Officer, CSIR, New Delhi—Nominee of Director-General, Scientific & Industrial Research on the Court and the Executive Council of the Forest Research Institute and Colleges, Dehra Dun.

DR D. S. BHATIA, Scientist, CFTRI, Mysore—Member, Dairy Research Advisory Committee, National Dairy Research Institute, Ministry of Food & Agriculture, New Delhi.

SHRI PREM PRAKASH, Scientist, NPL, New Delhi—Member, Sub-Committee for Verification of Coal Tubs of the Ministry of Commerce, New Delhi.

SHRI BHARAT BHUSHAN, Scientist, RRL, Hyderabad—Member, Committee for Development of Ancillary Industries to Central Projects, Government of Andhra Pradesh.

DR K.T ACHAYA, Scientist, RRL, Hyderabad—Member, Expert Committee to examine the Reichert value of ghee and butter prescribed under the P.F.A. Rules 1955, by the Ministry of Health, Government of India, New Delhi.

ISI Nominations

DR P. S. GILL, Director, CSIO, Chandigarh—Principal Representative, Engineering Division Council; and Standing Working Committee, Engineering.

SHRI D. D. PURI, Scientist, Service and Maintenance Unit, CSIO, New Delhi—Member, Engineering Metrology Sectional Committee; and Panel for Industrial Instruments.

SHRI M. M. SURI, Director, CMERI, Durgapur—Member, Non-destructive Testing Sectional Committee.

Deputations

DR H. B. MATHUR, Scientist, NCL, Poona, attended a symposium on electrochemistry at Delhi University during Oct. 2-3, 1964 and presented a paper on Thermodynamic properties of transition metal complexes of amino acids.

DR RAM RAO, Scientist, NCL, Poona attended a symposium on Recent advances in plant polyphenolics, held at Delhi on Oct. 5, 1964.

SHRI M.M. CHADDA, Scientist, NCL, Poona attended a lecture course on Fortran (a programming language for electrical digital computers) at the Tata Institute of Fundamental Research, Bombay during Oct. 5-17, 1964.

SHRI MOMEN, Scientist, NCL, Poona attended a seminar on Nuclear Dynamics Polarisation, at the Tata Institute of Fundamental Research, Bombay during Oct. 12-14, 1964.

SHRI K. P. GOVINDAN, Scientist, NCL, Poona attended a symposium on Problems in Water Treatment held at CPHERI, Nagpur during Oct. 29-30, 1964.

SHRI RAM PRASAD, Scientist, CSIO, Chandigarh attended the Seminar on the Recent Advances in Optics & their Application in Defence, held at Instrument Research & Development Establishment, Dehra Dun during Oct. 30-31, 1964.

SHRI H.C. SEETHARAM, Scientist, NAL, Bangalore proceeded from Canada to U.K. on Nov. 9, 1964 for training at the Royal Aircraft Establishment, Bedford, under the Colombo Plan.

DR S.K. DHAR, Pool Officer, NCL, Poona was deputed to Kurukshetra University for three months for delivering a course of lectures on Chemical Thermodynamics.

DR P. MADHAVAN NAIR, Scientist, NCL, Poona delivered five lectures on Spectroscopy (NMR) in Structural Organic Chemistry at the Indian Institute of Technology, Kanpur during Nov. 21-27, 1964.

SHRI C.G. GUPTE, Scientist, NAL, Bangalore returned to India on Dec. 6, 1964 on completion of his assignment under the terms of contract with the Canadian Vickers Ltd for the fabrication of the 4 ft tunnel.

DR Y. NAYUDAMMA, Director, CLRI, Madras & SHRI K.G. KRISHNAMURTHI, Officer on Special Duty, NAL, Bangalore returned to India on Dec. 4, 1964 after attending the meeting of the Commonwealth Scientific Committee held in New Zealand during Nov. 15-Dec. 2, 1964.

SHRI B. S. KESAVAN, Director, Insdoc & PID, New Delhi attended a meeting of the Bureau of International Advisory Committee on Bibliography, Documentation and Terminology of the Unesco held in Paris during Dec. 14-16, 1964.

SHRI B.G. SURYANARAYANA, Scientist, NAL, Bangalore has been deputed to the works of Canadian Vickers Ltd, Montreal, Canada for a period of 6 months with effect from Dec. 20, 1964, under the 4 ft tunnel contract agreement.

Honours & Awards

DR ATMA RAM, Director, CGCRI, Calcutta, has been elected Vice-President of the National Institute of Sciences, India.

DR S. MUKERJEE, Scientist, IIBEM, Calcutta has been elected a Fellow of the Egyptian Public Health Association.

SHRI BRAHAM DUTT UKHUL, Junior Documentation Assistant, Insdoc, secured the first position in the Diploma in Library Science Examination, Delhi University, held in 1964. He was awarded the Gopalakrishna Gold Medal at the recent Convocation.

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